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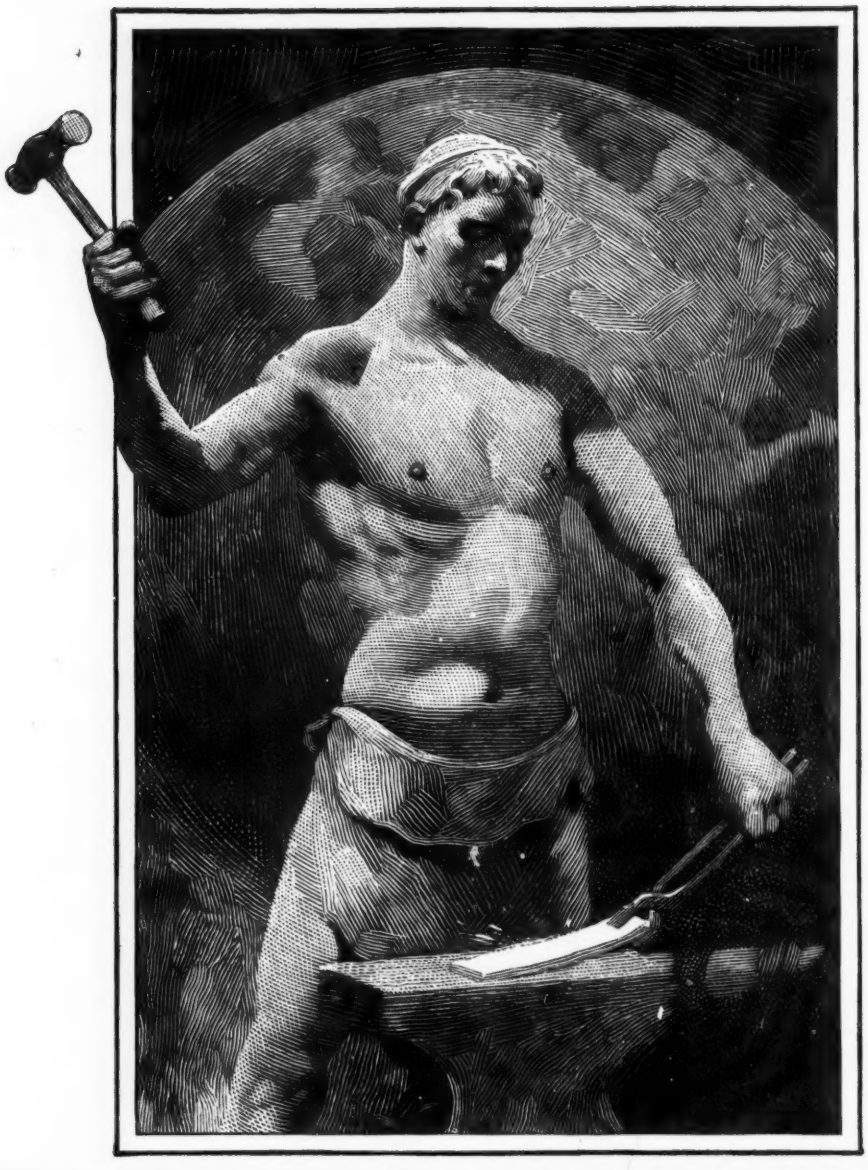

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AUTOMOTIVE INDUSTRIES
The AUTOMOBILE

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Where Is the Profit Line Going?

Ten big companies have increased production 100 per cent in last five years but profits have not gone up proportionately.

By James H. Collins

THE automobile industry is feeling the effects of too persistent worshipping at the shrine of volume. Its record of growth is unparalleled in commercial history and its present position is the logical outcome of prolonged adherence to policies calling for continued expansion year after year.

Now market conditions are forcing a change in business practices. The race is not to the swift, but to the foresighted. The situation today calls for a careful analysis of underlying conditions rather than for further effort to build for future greatness.

The automobile business has reached a point where the paramount problem is that of adequate profits. Of course, the first consideration of any business is profit, but the automobile industry during its first twenty-five years of existence has seldom had occasion to take stock of its financial position with a view to reorganizing for greater profit. As the demand for automobiles became more and more national in scope, the better car companies were able, with reasonable care, to assure themselves of adequate and substantial financial returns.

For the past ten years the industry to all intents and purposes has been producing somewhat behind its market. There have been periods of temporary overproduction, it is true, but on the whole the demand for automobiles has been somewhat in excess of the current supply. The tendency, therefore, throughout the entire industry has been to plan for production and still more production. With the increasing output has come a constant decrease in the cost of production. Here the automobile manufacturers have been wise in passing on to the car buying public the economies resulting from large scale production. Price reductions in turn have made possible further increases in factory schedules.

IT is a sound economic principle that, other things being equal, the greater the output the less will be the cost, and the lower the price to the buyer. In building on this foundation the leaders in the automotive industry have been farsighted. They have realized that the national market for automotive products must early be developed to its greatest capacity if in later years the business is to remain as one of the greatest of the nation's industrial bulwarks.

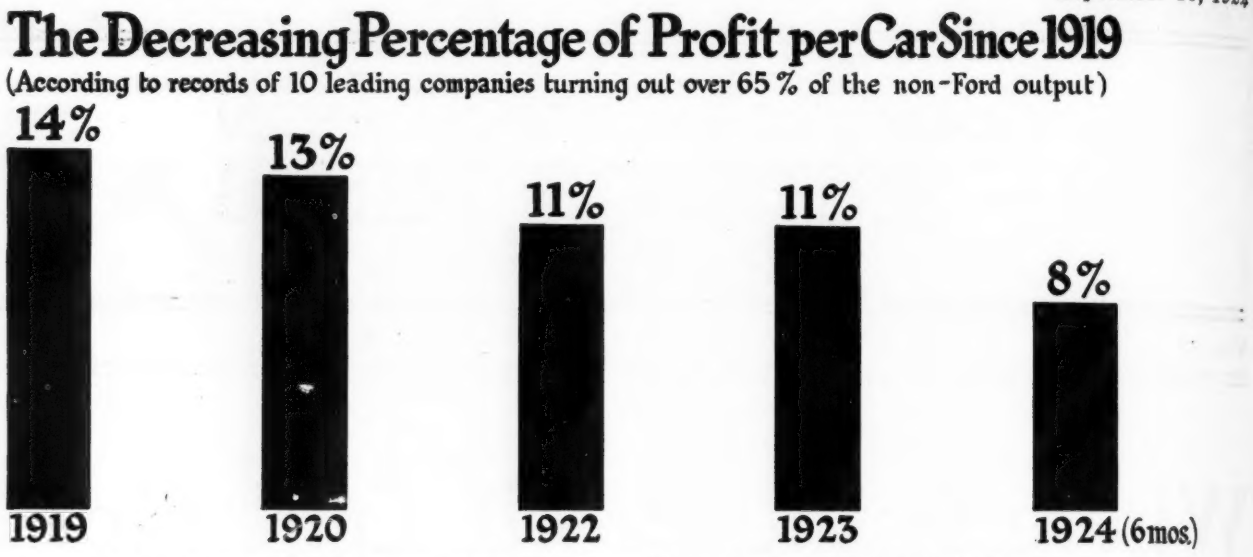
For the last year or two, however, the poli-

Profits vs. Volume

THIS article is the first of a series which will analyze this vital problem from every angle.

James H. Collins, well known to the industry through his talks on business conditions at the Chilton luncheons to automotive executives given at show time each year, is particularly well qualified to lay the foundation for the further articles which are to come. As Manager of the Commercial Survey Department of the Chilton Co., Mr. Collins has studied exhaustively the economic aspects of automotive development for many years.

Basing his present conclusion on a careful investigation of balance sheets and profit and loss statements, Mr. Collins says: "The automobile industry is feeling the effects of too persistent worshipping at the shrine of volume." He fires the opening gun of the most important set of articles to be printed in AUTOMOTIVE INDUSTRIES in many years.



cies of large scale production have been carried almost to the limit. The record for 1923 was a surprise even to the shrewdest minds of the industry. But in spite of the great output the national sales organization experienced no insuperable difficulties in placing these cars in operation. During the past eighteen months, however, the chart of current profits has not been as satisfactory as the production curve.

Many of the important factors in the industry have felt that only by keeping up high production schedules could they maintain their places in the ranks of the industry. In some cases, high production schedules have been maintained at the expense of the profit side of the ledger. The cars have been made and the dealers have sold them, but the net profits resulting from these transactions have not been commensurate, in most cases, with the volume of business transacted. The sacrifice of profits to obtain volume now is proving to be one of the serious problems requiring the attention of the industry's best executives. These men appreciate the fact that the real purpose of quantity production is to reduce costs of manufacturing and selling and to insure adequate profits. Any production at the expense of profit is an element of weakness in a business and must be eliminated at once.

Next Week

PRACTICAL means of predicting the automotive future will be outlined by Norman G. Shidle in an article entitled, "Good Prophets Boost Profits."

Future issues will deal with the big subject of Profits vs. Volume in a practical and detailed way. Special articles will treat various phases of each of the following subdivisions of this major topic:

Production and Profits
Economics of Buying
Factory Capacity
Marketing Costs
Turnover of Capital

Read the whole series!

If we study financial statistics for a decade we find that the automobile industry has an interesting history. Only a few years ago, the well established car manufacturers were making substantial profits with a modest output.

As the market expanded, and the demand became more truly national in character, the situation changed somewhat. By 1920 the industry was confronted with the almost ideal combination of great profits coupled with great output. The temporary depression which swept the country in the late months of 1920 and remained during 1921 forced a curtailment of activities and brought about a considerable readjustment of plans.

As the nation gradually recovered from the slump, the automobile industry started the final swing into the normal course of all industry—large production and moderate profits. Now the pendulum seems to have swung to the other extreme, and for the past eighteen months we have witnessed a period of great production and comparatively small profits.

Figures covering the business of ten large companies producing over 65 per cent of all cars made, exclusive of Fords, show the general trend of the industry. *The profits of these ten companies have held fairly constant for the past four or five years. At the same time, their production has increased more than* 100 *per cent.* Superficially, at least, it would seem that the great increase in output has benefited these companies only to a slight degree.

Conditions Obtaining in 1923

Under conditions obtaining during 1923 it was necessary for them to maintain a tremendous production in order to prevent an actual dropping off in profits and the situation was such that any diminution of demand would require immediate action on the part of the car makers to readjust prices upward or to suffer a substantial loss in profit.

Perhaps the most significant figures published in recent years were compiled by the National Automobile Chamber of Commerce. These figures show the extent to which the automobile industry has gone in setting production and sales ahead of profits. They show that during the decade from 1913 to 1923 the value of the dollar when applied to the general cost

of living had decreased to 61.3 cents, while the value of the dollar as applied to the purchase of automobiles had increased to 111 cents. No other industry has gone to this extreme in offering bargains to the buying public. Nowhere has the public shared to so great an extent in the advantages resulting from quantity output.

In fact, car makers have passed on to the buying public even more than the savings resulting from large production. *The percentage of profit to the manufacturer per car has declined steadily since* 1919, *and at the present time this percentage of profit is less than two-thirds of what it was five years ago.* The public, in turn, has given ample recognition of the bargains offered by the automotive industry. The tangible evidence of this fact is demonstrated in the latest registration figures showing a motor vehicle in use for every two families in the United States. The buying public, in fact, has always shown full appreciation of real bargains, and the attitude of the leaders of the industry has builded a great and widespread good-will for the automobile.

Profits Do Not Come from Bargain Sales

Now it needs to be remembered that the profits of business do not come from bargain sales. In June of 1920, one of America's greatest retail merchants, John Wanamaker, sensing the general industrial situation, launched a 20 per cent price cut sale. The effects of this move were international in character and changed the entire face of the national market. Probably at no time in history have the sales of the Wanamaker stores exceeded those made during the 20 per cent sale, and yet the Wanamaker business could not continue on that basis. If sales today were being made at a 20 per cent reduction, the Wanamaker industries would soon be undergoing financial reorganization. Conditions frequently force price curtailments, but if these are prolonged, business profits fall off so rapidly that it is impossible to avoid a readjustment.

Quantity sales are desirable, but only when made at a satisfactory profit.

Current financial statements of some of the leading car companies give emphasis to the statements made above. For the fiscal year ending June 30, 1924, the Ford Motor Company show net earnings of about $79,192,000, while for the fiscal year ending June 30, 1923, net earnings were approximately $98,248,000. It will be seen that there has been a decrease of over 10 per cent in net earnings of this compay, while at the same time production has climbed from 1,080,000 in 1923 to 1,833,812 in 1924. At 10 per cent decrease in net earnings coupled with an 85 per cent increase in production affords food for serious thought.

Another well-known and long-established company whose production is annually in excess of 100,000 cars, shows for the first quarter of 1924 an increase of 40 per cent in output over the similar quarter for 1923, while net earnings declined 10 per cent.

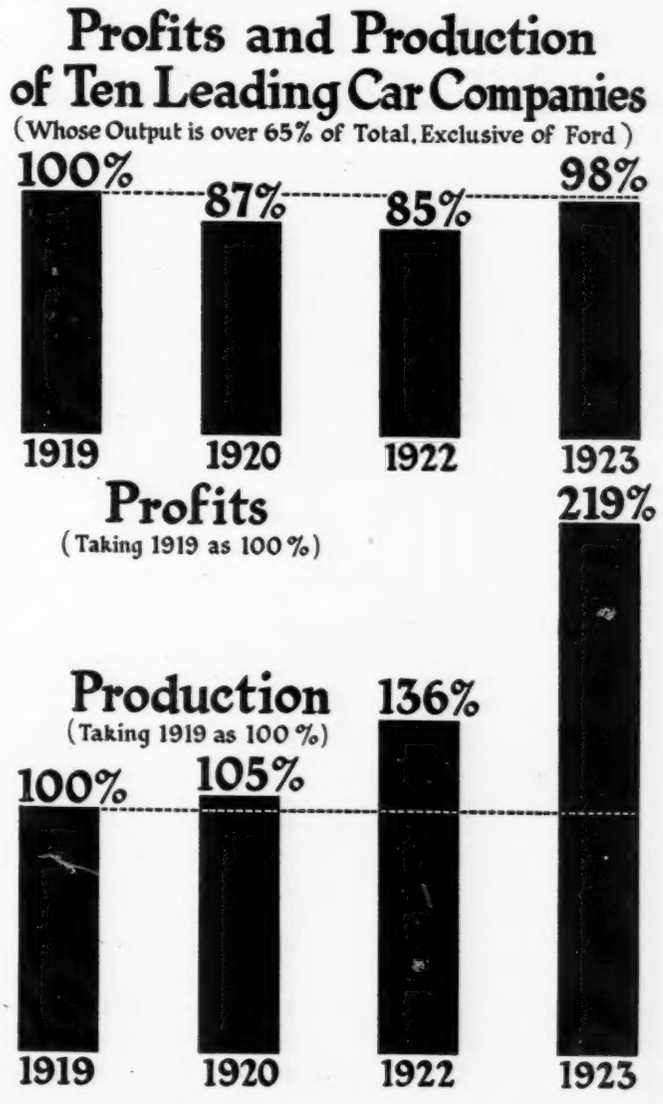
Another company with a production in excess of 150,000 annually shows for the first quarter of 1924 a decrease of 23 per cent in profits as compared with the similar period for 1923, while output was increased about 50 per cent.

General Motors Corporation sold 379,590 cars and trucks during the first six months of 1924 as compared with 408,985 for the first half of 1923. Earnings of the corporation for the first half of 1924 were $27,066,990 compared with $41,585,601 for the first half of 1923. Here we note a decrease of 7 per cent in production, while earnings have declined over 34 per cent.

These examples typify conditions throughout the industry. They show the extent to which profits have been sacrificed in order to insure great volume.

The present trend of events is unmistakably shown by recent price increases. For the next few months it may be expected that more and more of the car makers will take steps to provide for adequate operating margins.

Probably the most helpful indication of future prosperity that can be noted today is the tendency among the stronger car makers to drop out of the race for greater volume and to strengthen their financial fences. If this movement becomes general, many of the worthwhile car makers within the industry can face a decrease in output of 25 per cent or even more with the equanimity that comes from assurance of adequate profits.



New Studebaker Models Have Pressure Lubrication and More Power

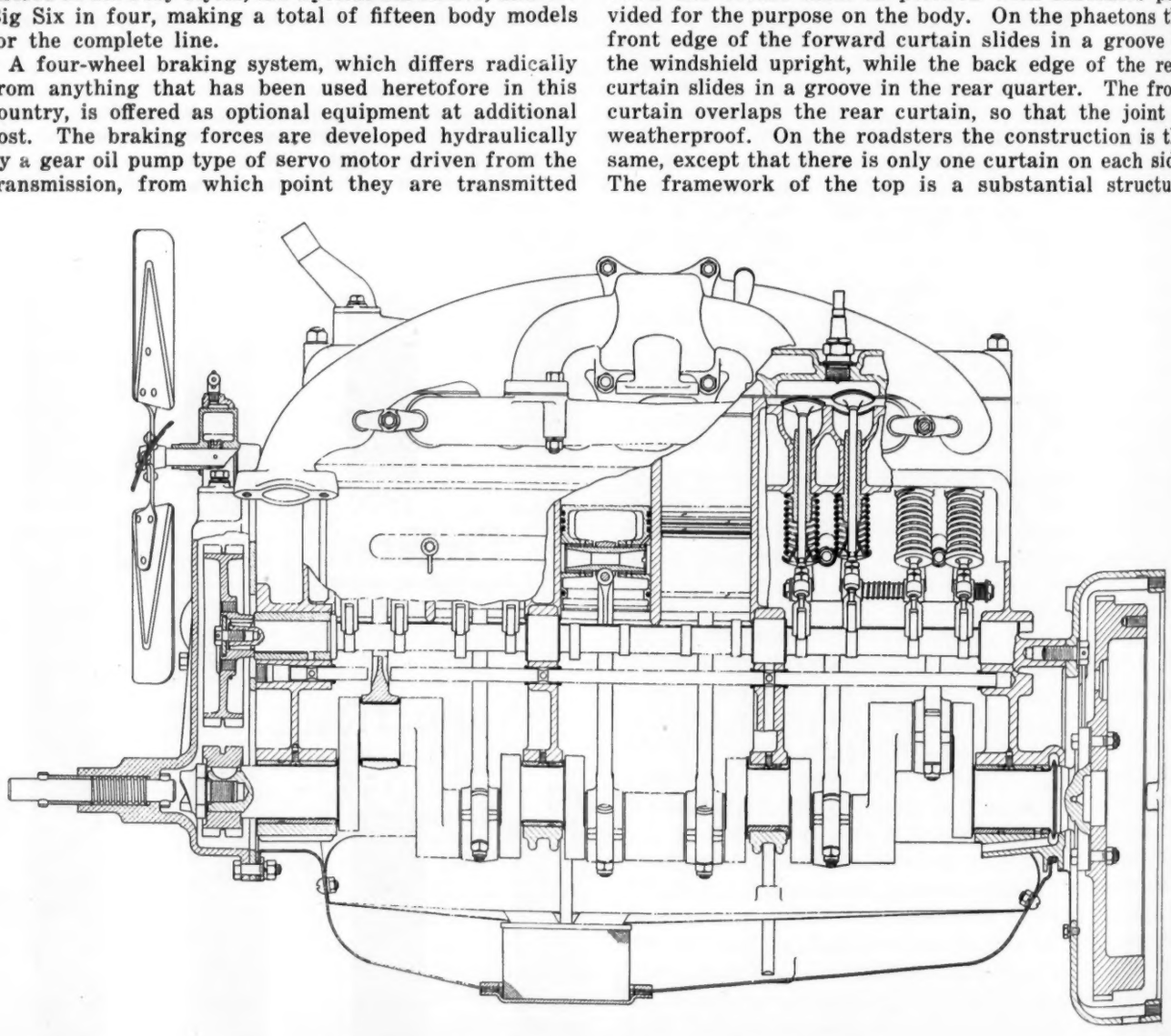
Balloon tires, transmissions integral with engines and automatic spark timing are regular features, while four-wheel brakes with servo mechanism come as an extra. Bodies and radiators changed.

By Donald Blanchard

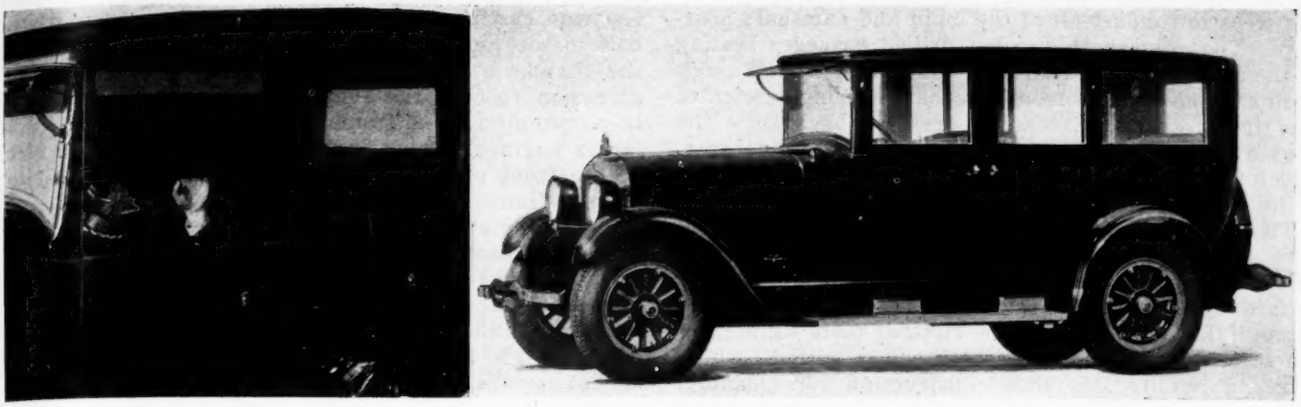
THREE practically new six-cylinder models make up the Studebaker line for 1925. All have more powerful engines than the corresponding models of last year, pressure lubrication, full automatic ignition, unit powerplants, 1-in. longer wheelbases and balloon tires as regular equipment. The body and hood lines of all models have also been changed and improved. The Standard Six, which replaces the former Light Six, is offered in six body styles, the Special Six in five, and the Big Six in four, making a total of fifteen body models for the complete line.

A four-wheel braking system, which differs radically from anything that has been used heretofore in this country, is offered as optional equipment at additional cost. The braking forces are developed hydraulically by a gear oil pump type of servo motor driven from the transmission, from which point they are transmitted mechanically to the brakes. This construction has the twofold advantage that it gives perfect equalization between right and left and at the same time minimizes the pedal pressure necessary to operate the brakes.

All open models are fitted with an entirely new design of permanent top. Side curtains are mounted on shade rollers concealed in the top, and when protection against rain is needed it is only necessary to pull the curtains down and secure them in position with fasteners provided for the purpose on the body. On the phaetons the front edge of the forward curtain slides in a groove in the windshield upright, while the back edge of the rear curtain slides in a groove in the rear quarter. The front curtain overlaps the rear curtain, so that the joint is weatherproof. On the roadsters the construction is the same, except that there is only one curtain on each side. The framework of the top is a substantial structure



Sectioned side elevation of Studebaker Standard Six engine



Left—Showing the new type of roll-up side curtains for Studebaker open bodies. Right—Studebaker Big Six seven-passenger berline

made up of pressed steel panels with welded joints. The rear quarter and back panels have plate glass windows.

The power output of the engines has been increased—with a consequent improvement in acceleration—by raising the compression and, in the case of the Standard Six, by increasing the piston displacement. The Standard Six engine has a ¼ in. larger bore than the Light Six and the compression ratio has been raised from 4.38 to 4.5. These changes have increased the power from 40 to 55 hp. at 2200 r.p.m. The compression ratios in the Special and Big Six engines have been raised from 4.1 to 4.45, with the result that the former is now said to develop 65 hp. and the latter 75 hp., both at 2400 r.p.m. No change has been made in the cylinder dimensions, which are 3½ x 5 and 3⅞ x 5 in. respectively.

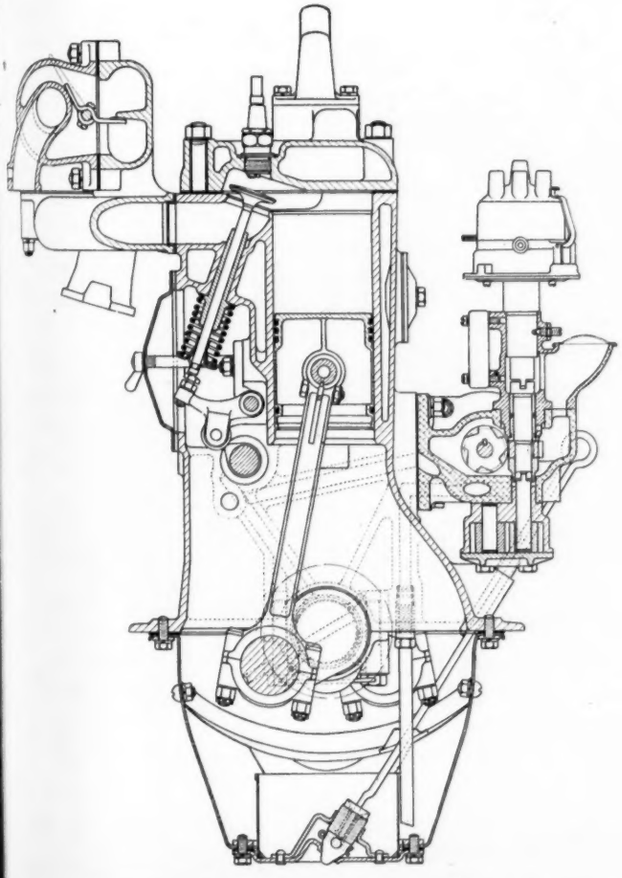
In the past the Special and Big Six engines have used the same crankshaft, and this practice is continued, but the shaft is heavier and stiffer than formerly, as shown by the following comparison of bearing dimensions:

	1924 Series	1925 Series
Front bearing	2 x 2 13/16 in.	2 15/32 x 2 23/32 in.
Front center bearing	2 1/8 x 2 1/8 in.	2 1/2 x 1 15/16 in.
Rear center bearing	2 3/16 x 2 1/8 in.	2 17/32 x 1 15/16 in.
Rear bearing	2 1/4 x 3 5/32 in.	2 9/16 x 3 5/32 in.
Crank pin	2 x 2 13/16 in.	2 5/16 x 1 3/4 in.

The crankshafts are machined all over and put in static and dynamic balance.

Except for the foregoing changes and those made necessary by the adoption of full pressure lubrication and of the unit powerplant construction, the engines do not differ materially from those employed in last year's models. In the Standard Six the oil pump is mounted and driven in the same manner as in the Light Six. It is carried by a bracket which is bolted to a pad cast on the right side of the crankcase. This bracket also supports the generator, water pump and distributor. The drive for this group of accessories is from the timing chain through a short accessory shaft with fabric couplings at either end to the front end of the pump shaft. The generator is driven through a coupling and the oil pump and distributor through helical gears on the rear end of the pumpshaft.

From the pump an oil line leads to a header extending the length of the inside of the crankcase and supported by the main bearing webs. Ducts are drilled in



Cross section of Standard Six engine

NEW 1925 STUDEBAKER PRICES

Standard Six

3-p. dup. roadster	$1,125	5-p. coupe	$1,495
3-p. dup. phaeton	1,145	5-p. sedan	1,595
3-p. coupe roadster	1,395	5-p. berline	1,650

Special Six

3-p. dup. roadster	$1,450	5-p. sedan	$2,150
5-p. dup. phaeton	1,495	5-p. berline	2,225
4-p. victoria	2,050		

Big Six

7-p. dup. phaeton	$1,875	7-p. sedan	$2,785
5-p. coupe	2,650	7-p. berline	2,860

Studebaker hydraulic four-wheel brakes optional equipment on all models at the following extra charges:

Standard Six: $60.00, including 4 disk wheels and spare rim.
Special Six: $75.00, including 5 disk wheels.
Big Six: $75.00, including 5 disk wheels.

the webs to conduct oil to the main and camshaft bearings. The crankshaft also has drilled passages leading to the connecting rod bearings. Discharge from a longitudinal groove in the front camshaft bearing lubricates the timing chain. Excess oil draining back from the engine is caught in a pressed steel tray. This tray, which is supported by the oil pan, has a flared opening at its lowest point.

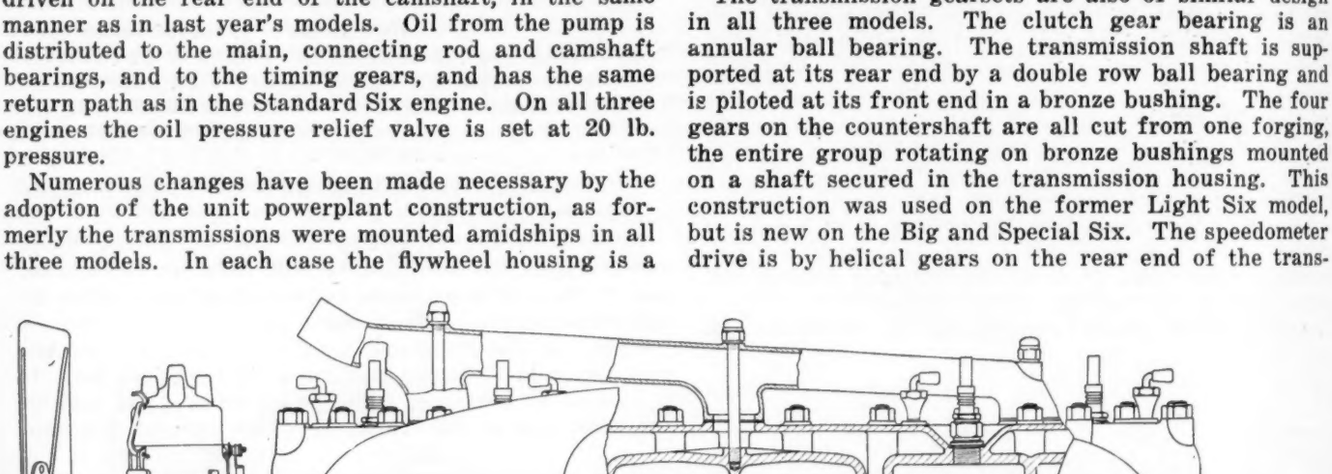
The oil drains through this opening into a cylindrical wire screen supported by a circular plate bolted to the bottom of the oil pan. Before entering the reservoir formed by the base of the oil pan, the oil is filtered through the screen. When the circular plate supporting the screen is dropped, the screen comes with it, which makes a readily accessible construction for cleaning. The drain plug is arranged so that it may be opened from above by turning the bayonet gage provided for measuring the oil level.

In the Special and Big Six engines, which are exactly alike in every respect except size, the oil pump is housed by a casting bolted to the rear of the cylinder block and driven off the rear end of the camshaft, in the same manner as in last year's models. Oil from the pump is distributed to the main, connecting rod and camshaft bearings, and to the timing gears, and has the same return path as in the Standard Six engine. On all three engines the oil pressure relief valve is set at 20 lb. pressure.

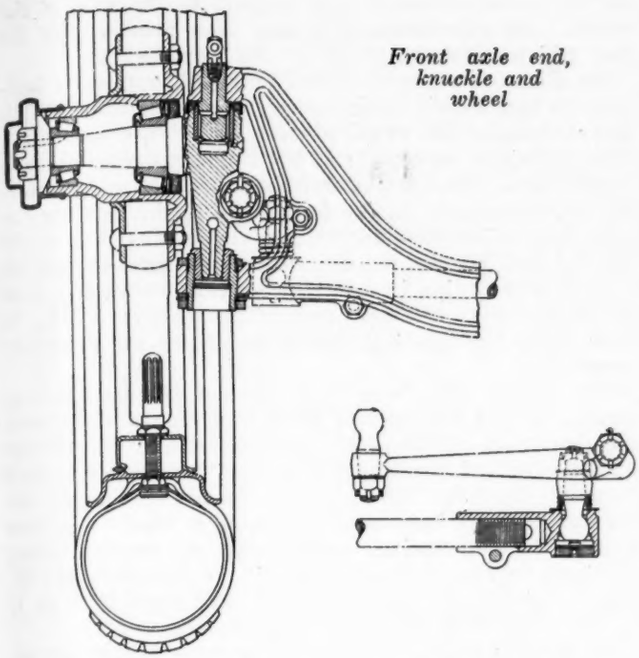
Numerous changes have been made necessary by the adoption of the unit powerplant construction, as formerly the transmissions were mounted amidships in all three models. In each case the flywheel housing is a separate casting, with integral supporting arms which bolt to the longitudinal members of a sub-frame. On the Standard Six the front support is formed by an extension cast on the timing chain cover, which rests in a trunnion on a frame cross member. In the two larger engines, supporting arms are cast on each side of the front of the crankcase, and these arms bolt to the sub-frame, thus giving four point suspension.

Single plate clutches and three-speed, selective sliding gear transmissions are used on all models. In the Standard Six the driven disk is 10 in. in diameter, while in the Special and Big Six this dimension is 12 in. In the former unit there are nine helical springs, each exerting about 130 lb. pressure, and in the two latter, twelve helical springs, which exert about 145 lb. pressure each. In other respects the clutches used on the three models are of identical design. The friction material is riveted to the driven disk, and release is effected through levers, which are provided with adjusting studs to take up wear. The clutch release bearing is a ball thrust and the pilot bearing an annular ball type.

The transmission gearsets are also of similar design in all three models. The clutch gear bearing is an annular ball bearing. The transmission shaft is supported at its rear end by a double row ball bearing and is piloted at its front end in a bronze bushing. The four gears on the countershaft are all cut from one forging, the entire group rotating on bronze bushings mounted on a shaft secured in the transmission housing. This construction was used on the former Light Six model, but is new on the Big and Special Six. The speedometer drive is by helical gears on the rear end of the trans-



Side elevation partly in section of Studebaker Big Six engine



Front axle end, knuckle and wheel

mission shaft. All models have transmission locks as regular equipment.

From the transmission the drive is through two universals and a tubular propeller shaft. Fabric universals are used on the Standard Six and Spicers on the two larger models.

Rear axles are all of the semi-floating type, with helical bevel reduction gears, the design being much the same for all three models. The differential housing has been made stiffer and the pinion shaft mounting is more rigid. This shaft is carried in two opposed taper roller bearings mounted in a sleeve which screws into the differential housing and is locked in position with clamp and key. This sleeve now has pilots on each end, with the threaded portion near its center, which gives increased rigidity as compared with last year's models, in which it was piloted at one end only, the thread being at the other end.

Pinion Adjustment

With this design, adjustment of the pinion with respect to the rear ring is facilitated, as the work can be done from the outside of the axle. The pinion shaft bearings can also be adjusted from the outside. Axle shafts can be removed by taking out the cages of the roller bearings supporting their outer ends, without disturbing the differential. Removal of a plate bolted to the rear of the axle housing makes the differential readily accessible. The bevel reduction gears now have 4-6 instead of a 5 pitch, which gives stronger teeth. The rear axle reduction on the Standard Six is 4.6 to 1, except on the five-passenger closed models, which have a 5.1 to 1 ratio. All Special and Big Six models have a 4.36 to 1 reduction, except the Big Six phaeton, which has a ratio of 3.69 to 1.

Elliot type front axles are used on all models. On the two-wheel brake jobs the axes of the knuckles are vertical and the wheels are cambered. In the Standard Six axle the use of a thrust button to carry the load instead of the washers employed previously for this purpose helps to make the steering easier with balloon tires. This construction minimizes the radius at which the friction acts and, consequently, makes for easier movement of the knuckle. The upper pivot is formed by a steel pin secured in the axle eye and having its bearing in a hardened steel bushing in the knuckle. The lower end of this pin rests on the thrust button. The lower pivot bearing is formed by the tapered end of the knuckle, which fits in a hardened steel thimble carried in a bushing piloted and threaded in the lower eye of the axle.

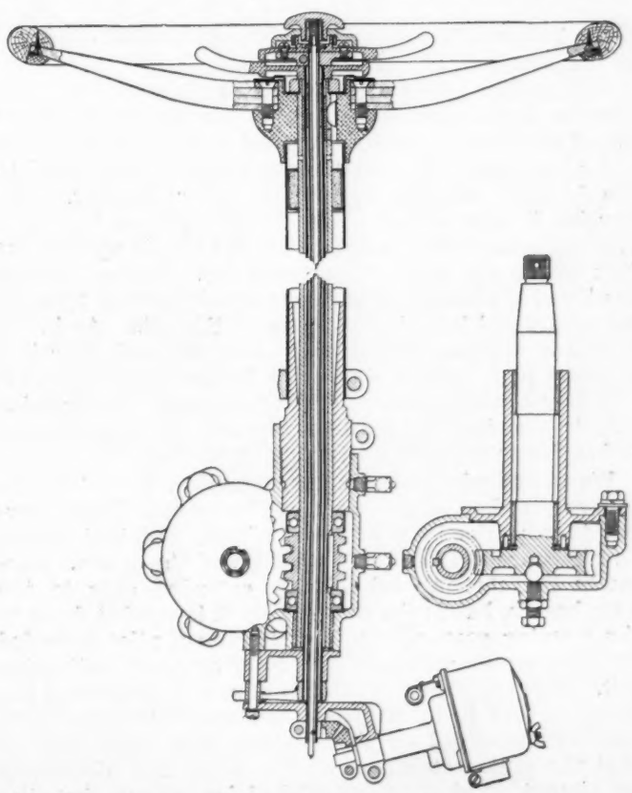
Adjustment of both bearings is effected by taking up on this bushing. Lubrication at the upper pivot is provided by an Alemite fitting mounted on the top of the pin in the upper axle, through a drilled passage. A retainer pressed into the lower axle eye forms a reservoir for lubricant, which is supplied by an Alemite fitting through a passage drilled in the knuckle.

In the Standard Six axle with front wheel brakes the construction at the knuckle bearings is substantially the same as described in the preceding paragraph. In this axle, however, the knuckle is inclined transversely, so that its axis prolonged intersects the road surface at a distance of ½ in. from the center of tire contact. Another difference is that the stub axle is separate and is a taper fit in the knuckle.

To meet the front wheel braking strains the axle forging is made much heavier than that used on the chassis with rear wheel brakes only.

Taper roller bearings are used at the upper pivots in the Special and Big Six front axles, as in last year's models, but the angle of the rollers is steeper. The axle used in these two models when equipped with rear wheel brakes only has the knuckle axis vertical and the wheels cambered. The cone of the roller bearing is integral with a pin which fits in the upper eye of the axle. The lower pivot is formed by a pin pressed into the knuckle and having its bearing in a hardened steel bushing which is threaded and piloted in the lower eye of the axle. By taking up on this bushing adjustment of both pivot bearings is effected.

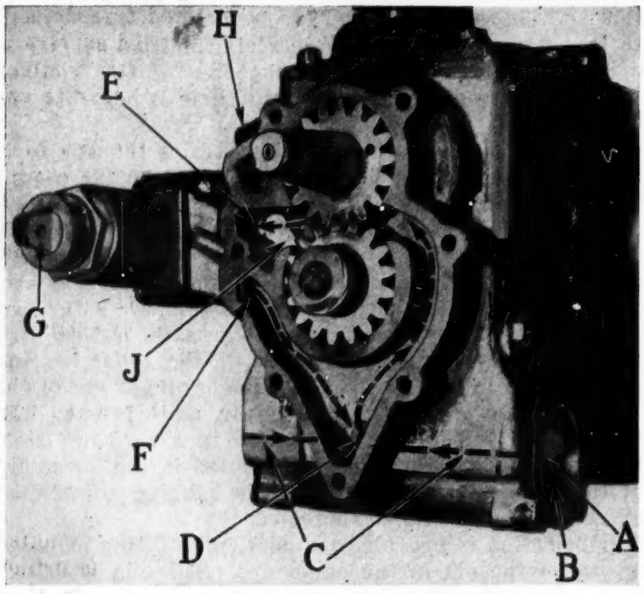
Lubrication is provided by an Alemite fitting mounted on top of the pin in the upper eye. This pin is drilled along its axis, the lower end of the passage thus formed opening into a reservoir machined in the knuckle



Steering gear of Big Six and Special Six

directly below the roller bearing. The pin pressed into the knuckle is also drilled axially and has a tube attached to its upper end which projects part way into the drilled passage in the pin in the upper axle eye. A retainer pressed into the lower eye from the bottom forms a reservoir below the lower pivot, from which lubricant is conducted to the bearing by a helical groove on the surface of the pin. The lower end of the passage in this pin is tapped, so that a pulley may be used to withdraw it from the knuckle should replacement be necessary.

In the Special and Big Six front wheel brake axles the construction at the upper pivot bearing is similar to that described in the preceding paragraph. At the lower



Rear end of Special Six transmission with oil pump cover removed

pivot, however, the construction resembles that employed in the Standard Six axle.

Lubrication for both pivot bearings is provided by an Alemite fitting mounted on top of the pin in the upper eye of the axle. This pin is drilled axially and the lower end of the passage opens into a reservoir machined in the knuckle directly below the roller bearing. The knuckle is also drilled along its axis and at its upper end has a tube attached to it which extends up into the hole in the pin in the upper axle eye. The passage in the knuckle discharges into a reservoir formed by a retainer pressed into the lower eye of the axle. As in the Standard Six front-wheel brake axle, the stub axle is a separate part, having a taper fit in the knuckle and secured by a castellated nut on its inner end. The knuckle axis is also inclined transversely and the axle forging is heavier to withstand the braking strains.

Worm and wheel steering gears with a 10 to 1 reduction are used on all models. The lower end of the steering tube works in a bronze bushing, and ball thrust bearings are provided at both ends of the worm. Formerly the steering tube jacket extended only to the floor boards, but in the new models it is carried down to the steering gear, where it clamps on a pilot provided for the purpose on the upper end of the worm adjusting nut. This construction assures proper alignment of the steering tube in its bearings. An eccentric adjustment has been provided on the steering gear case cover so that the center distance between worm and wheel may be altered. This is accomplished by making the pilot on the cover eccentric with respect to the axis of the wheel. An adjustment has also been provided for the ball which takes the thrust of the worm wheel.

As all models are equipped with full automatic ignition, no spark lever is necessary, and the lighting switch lever occupies its usual place. This lever operates a tube, which in turn controls the lighting switch through bevel gears. The lighting switch is mounted on the steering gear housing. In the Standard Six the lighting circuit fuse is mounted in the switch housing, but in the Special and Big Six the circuits are brought around the back of the engine in a flexible metal conduit to a fuse box mounted on the right side of the cylinder block. In both cases the lighting switch and fuses are unusually accessible.

All frames have been strengthened against torsional strains by the addition of front and rear tubular cross members. In addition, on the Special and Big Six the flange width of the frame side rails has been increased from 1¾ to 2 in. The springs remain unchanged, but the spring bolts have been increased in size. The front bolt of the rear spring, which takes the driving thrust, has been increased from ¾ to 1 in. in diameter, and the other spring bolts have been enlarged from 9/16 in. to ¾ in. This change applies to all models.

As in last year's models, the service brakes act externally on the drums at the rear wheels, but the internal emergency brakes have been replaced with contracting brakes on the transmission. This brake is operated through a steel cable from a handle on the dash, so that the only lever in the driving compartment is the gear shifter.

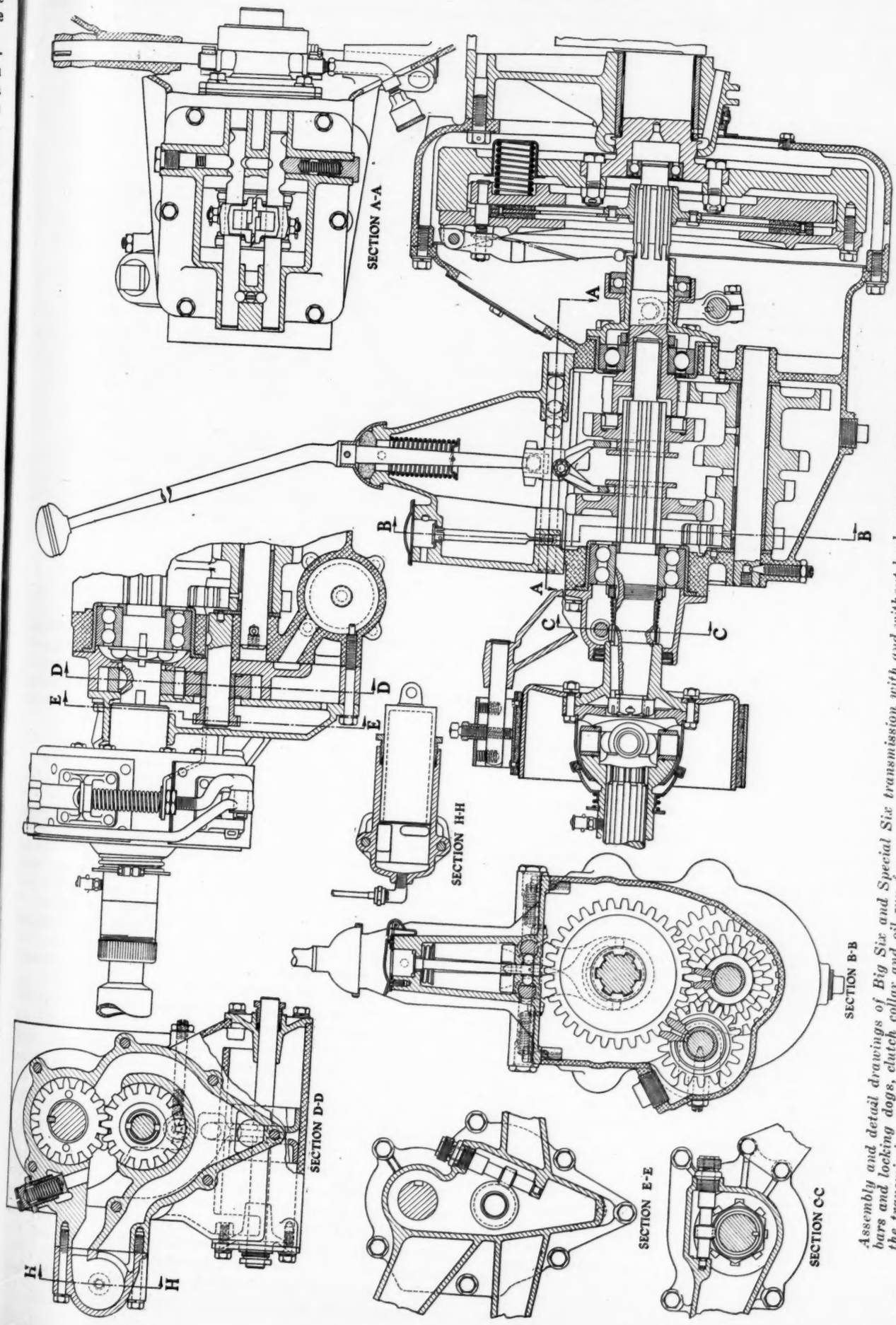
Artillery wood wheels with demountable rims are regular equipment on all models, except when four-wheel brakes are furnished. In the latter case disk wheels are regular equipment, as they permit setting the knuckle into the wheel. The nominal width of the rims used on the Standard Six is 4½ in., while the corresponding dimension on the two larger models is 5 in. The tire sizes are 31 x 5.25, 32 x 6.20 and 34 x 7.30 in. for the Standard, Special and Big Six models respectively.

Front Wheel Brakes

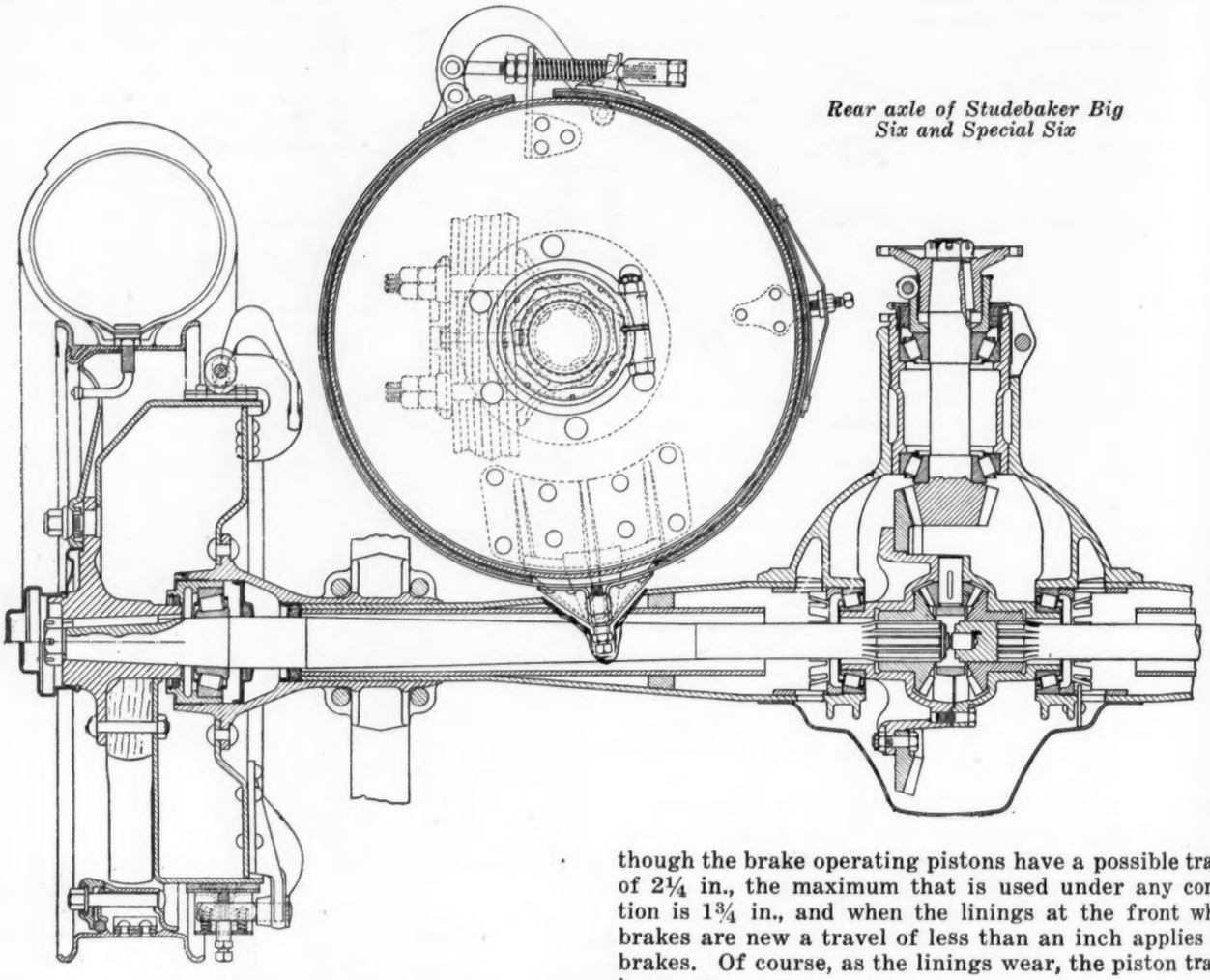
When front wheel brakes are furnished a special transmission is used, and, as has been pointed out previously, a special front axle. The former unit does not differ from the standard transmission as far as the gear changing portion is concerned, but it has the gear oil pump type of servo mechanism mounted on its rear end. The pump consists of two gears, one of which is keyed to the transmission shaft and the other rotating on a stud. It is inclosed by a cast housing and cover plate which bolt to the transmission case.

When the brake pedal is depressed, the pressure developed by the oil pump acts against two opposed pistons located in a cylinder cast integral with the bottom of the case. The pressure causes the pistons to move outward, and as they have the same diameter, the forces they transmit to the brake linkages are equal. This construction consequently gives perfect right and left equalization. In addition, all the work is done by the oil pump, so that a light pressure on the pedal applies the brakes.

In the cut the rear end of a Special Six transmission is shown with the oil pump cover plate removed. The cylinder in which the pistons operate is at B. The pump draws its supply of oil from the transmission through the opening A, and consequently the space in back of the pistons is at all times filled with oil. Opposite to A there is another opening in the cylinder wall, which is the entrance to the cored passage shown by the



Assembly and detail drawings of Big Six and Special Six transmission with and without brake servo mechanism. Section A-A shows the shifter bars and locking dogs, clutch collar and oil cup for same; section B-B is a transverse section through the assembled transmission and through the transmission lock; section C-C and E-E show the speedometer drive; section D-D shows the oil pump, the cylinder and the control valve chamber of the brake servo mechanism; section H-H shows the control valve of the servo mechanism



Rear axle of Studebaker Big Six and Special Six

dotted lines C. This passage has its outlet at D, from which point the oil moves, as indicated by the arrows, through the pump and into the passage E.

This passage connects with a parallel passage which discharges at F. It is obvious that ordinarily the pump is short circuited and develops only enough pressure to circulate the oil. When the brake pedal is depressed, the plunger G is pushed in, thus closing the connection between passages E and F. Under this condition the oil pump builds up pressure instantaneously and transmits it through the opening J through a passage to a port in the cylinder walls between the two pistons. A pressure relief valve H is provided, and it is set at the factory at about 60 lb., the figure varying on the different models.

The oil pressure is shown by a gage which is included in the instrument panel on cars equipped with four-wheel brakes. This gage has a red hand, which is set at the factory to indicate the proper pressure. When the brakes are applied the indicator on the gage swings over to the red hand on the gage, thus showing that everything is in working order.

This description also applies in principle to the Standard Six, the only differences being in the manner in which the oil passages are worked out. In the Special and Big Six the operating plunger G moves longitudinally and is connected to the brake pedal by a link. In the Standard Six this plunger moves transversely and is operated by the pedal through a link and bell crank.

The only adjustment on the brakes is at the rear wheels. Liberal clearances are provided at the front wheel brakes, as close adjustment is not necessary. Although the brake operating pistons have a possible travel of 2¼ in., the maximum that is used under any condition is 1¾ in., and when the linings at the front wheel brakes are new a travel of less than an inch applies the brakes. Of course, as the linings wear, the piston travel increases.

Should the servo mechanism fail to operate for any reason, the rear wheel brakes can be applied mechanically by depressing the brake pedal past the hydraulic range. A long rod extends from the pedal to an equalizer bar at the rear, with which it has a slotted yoke connection. This equalizer bar is connected to crank arms on the cross shafts mentioned previously. The slot in the yoke on the end of this rod is of such length that no force is exerted on the equalizer bar until after the brake pedal has passed through the hydraulic range.

The brake leverages are so laid out that the braking forces exerted by the pistons are divided between the front and rear wheels on a 40-60 basis. The wheels cannot be locked by the hydraulic servo mechanism, because, as the rear wheels slow down, the oil pump has its speed reduced in proportion, and if the rear wheels should lock instantaneously the pump would also stop. In that event the pressure on the pistons would be relieved and the brakes would be released. Of course, the rear wheels can be locked mechanically by depressing the pedal past the hydraulic range.

Radical changes in the shapes of the radiator shells used on the three models have altered the appearance of the cars considerably. The radiator shells are all higher, have a nickel-plated finish, and are provided with wing caps. Motometers are regular equipment on all Big Six and on Special Six closed models. The face of the radiator core is convex on all models.

The open cars, all of which are fitted with the new permanent top, are known as duplex models.

Just Among Ourselves

Buick Redefines Aims and Methods of Publicity

WE never were entirely sure about the exact location of the cockles of our heart but we know right well that they were greatly warmed the other day when a big automobile company announced in no uncertain terms that it was going to put its publicity on a strictly "news value" basis. Other companies have done this same thing before, but the number is not yet so large as to render unimportant the entrance of a new brother in the bond. There is a great many sound thoughts on publicity in a letter just sent out by A. B. Batterson of the Buick Motor Car Co. in which he announces that Buick has discontinued sending publicity stories direct to newspapers and has adopted the plan of putting them out through dealers, branches and distributors.

Publicity Credo Put in Concise Words

THE method of circulating the material isn't so important as the character of the stuff to be sent out. The Buick statement on future policies is worth some attention from every publicity department in the industry. Here it is: "It is our purpose to send out only such stories as we believe contain sufficient news value or human interest to warrant them being published and to be of help to the newspaper in furnishing news to its readers regarding the automobile industry. It will not be our purpose to send out a certain number of stories each week. In fact, some weeks there probably will be no stories sent out at all. The practice of digging up something to send out just to get a story over and the Buick name in the paper will be discontinued." No better creed for a publicity department could be written in so few words. Every newspaper and trade paper is eager for the real news from automobile plants, but news is something more than words; it comprises facts and ideas expressed in words. "We personally, in buying advertising in a newspaper," Mr. Batterson's letter continues—and we presume he refers to all types of advertising media as well—"consider only the advertising value of the newspaper, and if in our opinion it should be used for advertising, we use it regardless of whether it uses our news service or not."

Fiction Is Interesting but Facts Are Useful

IMPORTANT things aren't always interesting to read. Too often the reverse is true. That's why we think it's worth while to take a line or two to call attention of manufacturers to the new "Glossary of Automotive Terms and Instructions to Exporters" which has just been completed by the Automotive Division of the Bureau of Foreign and Domestic Commerce. The plot of this new book isn't very exciting and the suspense doesn't remind one of a Conan Doyle story, but the little pamphlet does contain real, practical information which will be useful to exporters of automotive products. Every exporter should get a copy and use it. He can obtain one, not only from Washington, but also from district offices of the Bureau.

How Did the Balloon Tire Come into Being?

WHO invented the balloon tire? The question probably will be answered to the satisfaction of everybody at the same time that everybody agrees as to who built the first automobile. Here is the answer given by one prominent engineer who vouches for its authenticity: An engineer representing a steel wheel concern came out of a big automobile plant one day after having failed to sell his product because the car engineer said that steel wheels made the car ride less comfortably. As he drove along with downcast eyes and discouraged heart, this steel wheel company representative was attracted by the wheels of a passing Ford. The familiar objects suddenly appeared to him in a new light. "Look at those little ribbons of rubber," he ejaculated to his riding companion. "That's where all the trouble lies." Two weeks later he took to one of the big tire companies a set of his wheels equipped with a newly designed large section tire. The tire manufacturer said in effect, "It's not feasible." A second tire builder who was approached became enthusiastic. The story from then on is public property. And that, according to one engineer, is how the balloon tire was invented.

Increased Confidence Reflected in Buying Methods

MANY automotive purchasing agents already are beginning to buy for the first six months of 1925, according to reports from various sections. This comes as interesting news because a hand-to-mouth buying policy has been the rule throughout the industry for the last few months. Besides indicating an increasing optimism in the immediate future, some observers lay the changed policy to a belief on the part of purchasing men that material prices are likely to rise within a few months. There is no indication, however, that anybody is going to load themselves up with heavy inventories which would be cumbersome.

N. G. S.

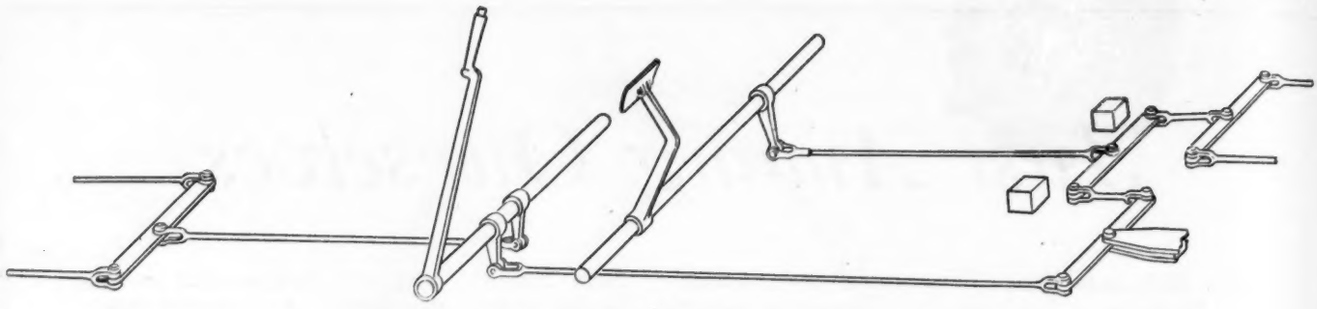


Fig. 1—Maybach brake linkage for four-wheel brakes

Recent Patents Reveal Tendencies in Brake Design

Among the features covered are, equalization without the loss of all brakes should the linkage break, simultaneous operation of transmission and rear wheel brakes and the servo mechanisms.

AN unusual amount of attention has been paid during past year to the development of brake design. The increasing number of accidents on the highways has made the provision of more powerful and more dependable brakes imperative, and the consequent adoption of four-wheel brakes by a considerable number of car manufacturers has greatly stimulated thought in this field.

Other factors which have tended to promote development in this line have been the great activity in the small car field in Europe, in connection with which it has been desirable to simplify the brakes. Too, the increasing use of tractor and trailer trains makes it necessary to have effective brakes on the trailers as well as on the tractor. The activity in this field has been reflected by the issuance of numerous patents relating to brakes. Some of the more interesting recently issued foreign patents are outlined here.

It is usually considered highly desirable to balance the braking effort, as this tends to equalize the strain due to braking on all of the wheels, thus minimizing the tire wear due to brake application. This also tends to prevent skidding due to the same cause. The ordinary brake equalizer, however, is open to the objection that if the connection to one of the brakes fails all of the brakes of the system become inoperative.

In a design of a four-wheel brake system patented by the Maybach Motor Mfg. Co. an attempt has been made to overcome this difficulty. This brake (Fig. 1) can be applied equally through a pedal and a hand lever. Referring to the illustration, a braking force applied to the pedal is transmitted through a lever and link to a balance lever which divides the effort equally between the front and rear brakes. Near the ends of this balance lever there are two stops, and if a break should occur anywhere in the system beyond this balance lever, the end of the lever affected will back up against its stop, which will permit of the application of the other pair of brakes. It is claimed for this system of brake linkage that it applies the brakes equally and that no breakage can render all of the brakes inoperative.

While on the subject of brake equalization it is interesting to refer to an arrangement used on a small car built in Czechoslovakia, in which, in view of the low price at which the car was to sell, it was considered unnecessary to provide the usual equalizer in the rear-wheel braking system. The connection from the brake pedal to the cross shaft naturally is made to this shaft closer to one than to the other end, and to obviate any tendency for one brake to be less effective than the other, the longer end of the cross shaft is made of larger diameter, so as to make the torsional flexibility of the two ends equal.

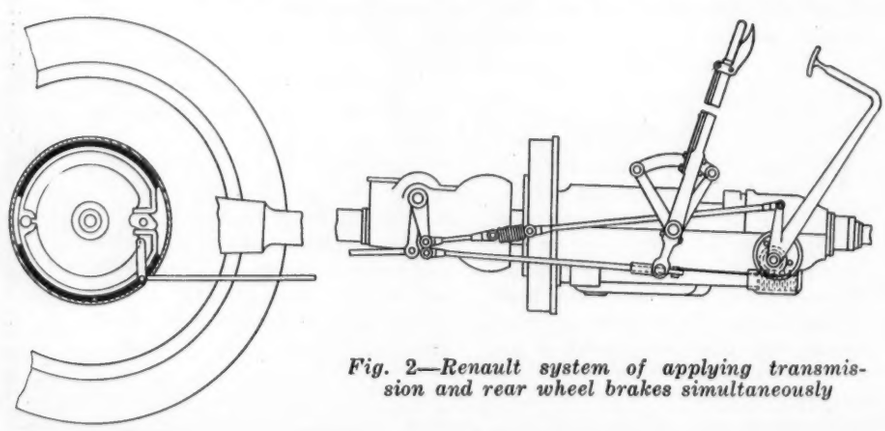


Fig. 2—Renault system of applying transmission and rear wheel brakes simultaneously

Chenard & Walcker of France have patented a transmission brake design in which the forward universal joint is placed between the transmission gearbox and the brake, instead of behind the brake. In other words, the

brake is mounted on the forward end of the propeller shaft. This necessitates a flexible connection between the frame and the brake for the purpose of taking up the brake torque. This arrangement prevents torque on the transmission housing when the brake is applied, as well as excessive loads on the universal joint back of the transmission, and it is claimed that in consequence these universal joints need not be of such careful design and manufacture.

Louis Renault of France has devised a new method of simultaneously operating the transmission and rear brakes. As may be seen from the accompanying illustration (Fig. 2), the brake pedal acts on the transmission brake through a pair of helical gears of which one is mounted on the pedal shaft. The pedal is also connected to the cross shaft for the rear brakes, this connection being made through a coiled tension spring so that the force with which the rear brakes can be applied by the pedal is limited. The object in view evidently is to divide the work of braking in regular driving between the two brakes, so as to minimize wear and reduce the danger of burning out the brake lining. The brake lever is also connected to the cross shaft, the connection being made through a link with a slot at the forward end, so that the rear brakes can be applied by the pedal without the lever being moved. It is impossible to apply the rear brakes to the locking point by means of the pedal, but this can be accomplished by means of the hand lever.

Servo Brakes

A great deal of work has been done in Europe in recent years in connection with servo brakes or brakes in which the major part of the force of application is derived from the momentum of the car. Three different designs of such servo brakes are described in the following and illustrated by the accompanying drawings.

One of the most active workers in the field of brake development has been the French engineer Hallot. In Fig. 3 is illustrated a brake design due to Hallot in which locking of the wheels is automatically prevented and in which the force of application transmitted through the brake rod is multiplied by a frictional device before it is applied to the brake proper. The brake is shown applied to a front wheel and it is interesting to recall in this connection that in the case of front wheel brakes it is particularly desirable that the brake should

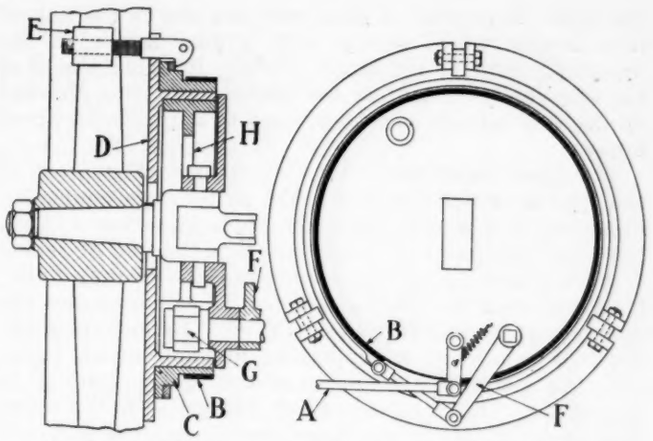


Fig. 3—Hallot servo brake for front wheels in which locking of the wheels is automatically prevented

be unable to lock the wheel, as that interferes with steering.

The brake rod A connects to one end of a friction band B, which surrounds a cylindrical part C that is connected to the brake drum D by means of the centrifugal masses E. The other end of the friction band connects to a lever F mounted on a shaft carrying the cam G for spreading the brake sectors H of the internal brake. As long as the wheels rotate at a fair speed the centrifugal masses connect the cylindrical part C to the wheel and if a slight pull is exerted on one end of the friction band through the pull rod A, the other end of the band will exert a much greater pull on lever F and thus apply the brake energetically. But as soon as the wheel approaches the locking point the cylindrical part C is released by the centrifugal masses and the brake is automatically released.

Louis Coatalen of the Sunbeam Motor Car Co. has taken out one patent on a servo brake in his own name and one jointly with H. C. M. Stevens. The Coatalen-Stevens brake, which seems to be the earlier of the two designs, comprises two concentric brake drums and two pairs of expanding sectors within these drums. The brake supporting bracket of the smaller brake is free on the axle housing and when this brake is applied through the pull rod the bracket tends to move angularly around

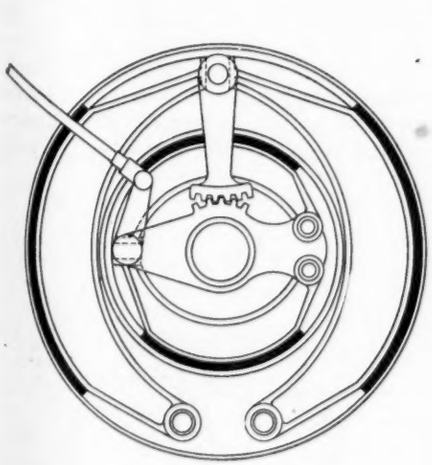


Fig. 4

Fig. 4—Coatalen-Stevens servo brake

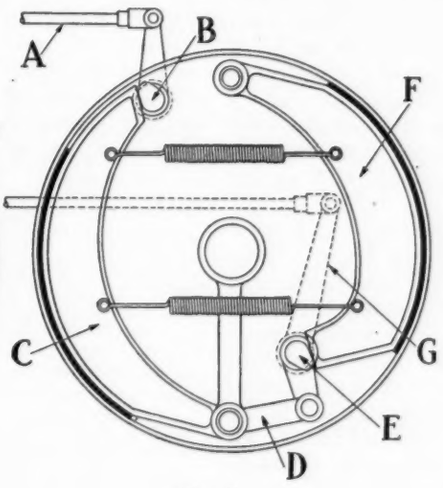


Fig. 5

Fig. 5—Coatalen servo brake

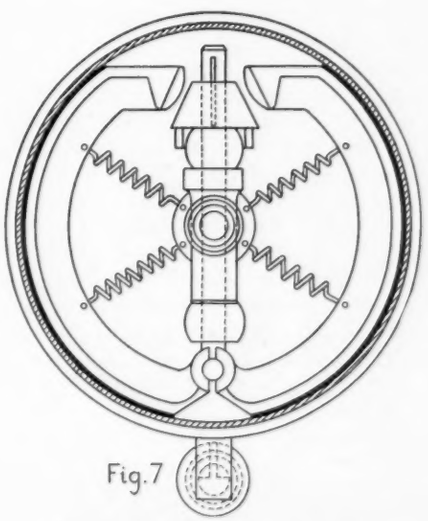


Fig. 7

Fig. 7—Duerkopp front-wheel brake operating mechanism

the axle. A number of gear teeth are cut on the hub of this bracket which engage with a gear sector on the operating lever of the larger brake. It is claimed that the angular movement of the brake supporting bracket on the rear wheels may be utilized to apply front wheel brakes.

The other servo brake due to Coatalen (Fig. 5) is of the type in which the two brake sectors are connected in series, as it were. The brake application force is applied through pull rod A and cam B to the end of sector C. The other end of this sector connects through a link D to a lever on the shaft of the cam E, which applies the main sector F against the brake drum. By mounting the shaft of cam B on a supporting bracket, which turns with the sector C, the action of the brake sector C is intensified. The main sector may be applied to the drum directly by means of the lever arm G and the pull rod connected to it, the connection of this pull rod to its operating lever being made of the slotted type, so that cam E can be operated through sector C.

G. H. Lanchester of the Lanchester Motor Co. has patented a front wheel brake operating mechanism which is similar to that used on many cars in this country. The brake is of the expanding type, the sectors being applied to the drum by means of a cam at the bottom, this cam, consisting of a bolt head and a washer of rectangular section, the bolt and washer being rotatable in a boss at the end of the brake operating shaft and coaxial with the knuckle pin when the brake is in the released position. Thus when the front wheels are swung around in steering the bolt head and washer rotate through the same angle. It is claimed that the relation of the parts is such that the force of application of the brakes is lessened when the wheels are swung around in steering.

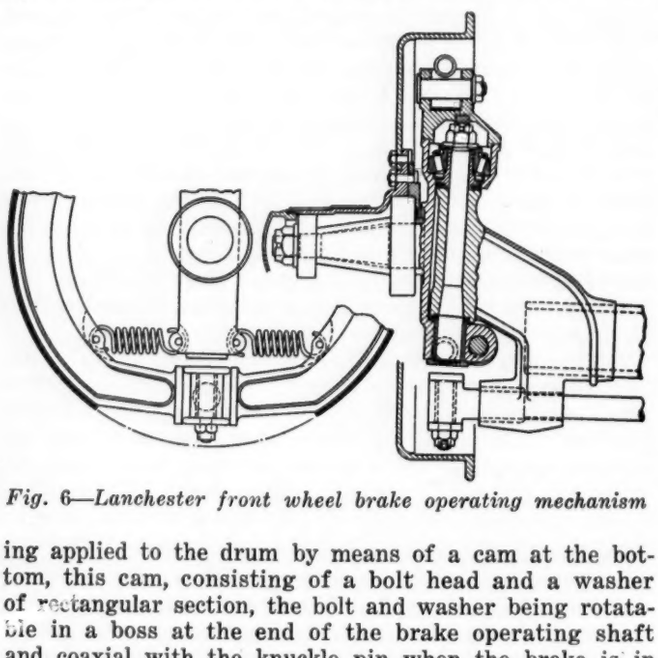


Fig. 6—Lanchester front wheel brake operating mechanism

A different method for compensating for the motion of the front wheel brakes in steering has been worked out by the Duerkopp Works of Bielefeld, Germany. In this design (see Fig. 7) the brake segments are expanded by a wedge which is pressed upward by a forked lever. The brake segments are withdrawn by four retraction springs which hook into a flange on the steering knuckle.

Details of an improvement in brake design made by the Timken Detroit Axle Co. come to us via the British Patent Office. In contracting band brakes the contracting mechanism usually consists of a bell crank and a link, the bell crank being pivoted to one end of the band and the link to the other. Usually the other end of the link is pivoted to a point on the bell crank not far from the end of the latter pivoted to the brake band. This involves some difficulties in the adjustment of the two halves of the band. For purposes of adjustment a bracket is secured to the brake supporting disk, with an eye through which the brake contracting link passes, that portion of the link between this bracket and the bracket on the upper half of the band being surrounded by a coiled spring, which bears against a nut threaded over the link. The disadvantage of this means of adjustment is that in trying to adjust the clearance of the lower half of the brake band the adjustment of the upper half is disturbed. This is overcome in the new design (see Fig. 8) in which the points of connection at both ends of the brake contracting link are made adjustable.

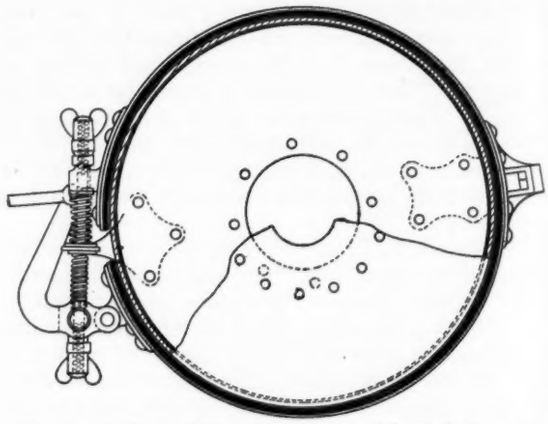
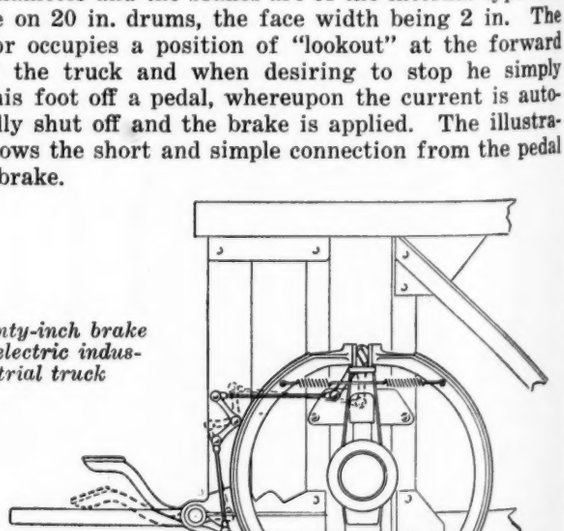


Fig. 8—Independent adjustment of both halves of band in Timken band brake

Industrial Truck Brake Design

THE electric trucks which operate in railroad yards, on docks and in factories must of necessity have very powerful brakes, because the drivers often have to thread their way through narrow passages and between crowds of people, and the trucks when fully loaded weigh even more than the average passenger car. Moreover, these trucks are generally provided with a safety feature so that when the driver is thrown from the forward platform the brakes are set automatically.

The design of brake used on one make of these trucks is illustrated herewith. The wheels on this truck are 27 in. in diameter and the brakes are of the internal type and operate on 20 in. drums, the face width being 2 in. The operator occupies a position of "lookout" at the forward end of the truck and when desiring to stop he simply takes his foot off a pedal, whereupon the current is automatically shut off and the brake is applied. The illustration shows the short and simple connection from the pedal to the brake.



Twenty-inch brake on electric industrial truck

American Makers Must Help to Change Selling Conditions Abroad, Reeves Says

Automobile still regarded as luxury in many countries, N. A. C. C. general manager states. Interchangeability of parts is feature most appreciated on American-built cars. Good market in future.

SPEAKING at a luncheon given to representatives of the trade press and others at the Hotel Astor on Friday of last week, Alfred Reeves, general manager of the N. A. C. C., who recently returned from an extended European trip, said that in order to create a really important market for American cars abroad it would be necessary to change fundamental conditions there. Europe still regards the automobile almost entirely as a luxury, and taxes it and restricts its use accordingly. If our industry, in cooperation with the industries and trades of the different countries, should succeed in eliminating these conditions the European industries would reap the chief benefit, but our manufacturers, owing to the high relative values of their cars, should gain enough business to make the effort worth while.

One of the chief reasons for the present limited use of automobiles in Europe is the high registration fee or annual tax. In England, for instance, the annual tax on a Ford car is £22.5 or about $110. A feature in connection with this tax that is particularly onerous to the trade is that it is paid quarterly, the owner being given a license which expires at the end of the quarter. Practically no cars are sold during the final month of each quarter, because purchasers do not want to pay a whole quarter's tax for a single month's use of their cars.

The feature of American cars that is most appreciated in Europe, Mr. Reeves said, is their interchangeability of parts. On the other hand, our body designs are not in great favor abroad, and fault is also found with our method of finishing cars, the finish generally being considered insufficiently durable. It is not uncommon in England for an owner to buy a $3,500 chassis and fit it with a $4,500 body. The high price of fuel in all European countries (about 40 cents a gallon in England) is another obstacle to the rapid development of motor traffic there.

German Competition Not Great

Most of the German automobile concerns, Mr. Reeves said, are small, and they certainly are not likely to become a menace to our industry in foreign markets. Daimler and Benz recently formed a combination, which, however, affects only their purchases and sales. The alliance was formed provisionally for one year and if it works out all right it will be extended. Under the Kartell system in Germany companies are permitted to do things which are prohibited here by the anti-trust laws.

Foreign cars are imported into Germany under special permits, only a limited number being issued, and the issuing of these permits is in the hands of Dr. Sperling, secretary of the German Automobile Manufacturers Association. This control will come to an end on Oct. 1, however.

As in most of the Continental countries, the import duties on automobiles in Germany are calculated on a weight basis, and this makes the rates very high for our low-priced cars, for which there is the greatest potential market in these countries. In Germany, for instance, the import duty on a Ford car figures out to 86 per cent, while that on a Cadillac amounts to only 12 per cent. The registration fee on a Ford in Germany is $100.

The dealers in Germany are well organized and have considerable influence with the Government. One point that has to be looked after if a considerable number of cars are to be placed in Germany is that of financing the sales, and two American automobile financing companies already are establishing organizations in that country, the movement having been initiated at the time a delegation of German dealers attended the Worlds Motor Transport Congress in Detroit.

Small French Market

It was Mr. Reeves' view that there was little chance of selling any appreciable number of American automobiles in France for a long time to come. The import duty is high, the taxes are high, the industry is very close to the Government and the exchange rate is so unfavorable that the sum in francs which must be paid in France for a high-grade American car after freight, duty, luxury tax and other items of expense are included, seems ridiculously high.

On the other hand, the French industry is doing well and has plenty of business on hand. One thing they cannot understand in France is the cooperative spirit between our manufacturers, as manifested in the pooling of patents and the open door policy maintained at the factories even in the case of direct competitors. Michelin, the tire manufacturer, has been trying to foster a similar spirit among French automobile manufacturers by advertising the industry at his expense, but so far with little success apparently.

The leader in the French industry is Citroen, and he is very popular with his countrymen—so much so that, as Mr. Reeves phrased it, "he can have anything he wants." Citroen is using American methods and American machine tools almost exclusively. He is a great competitor in England and he also threatens to become a strong competitor to our makers in foreign markets. At the present time 45 per cent of Citroen's production is exported. He pays his workmen $2 a day, as compared with the $6 paid in our factories, and the pace at which these Frenchmen work is almost the same as that maintained in our factories.

In England conditions will be materially changed by the removal of the McKenna duties at the beginning of next month. This, Mr. Reeves said, would undoubtedly result to our benefit, but it was the impression in the industry that the sudden removal of the 33 1/3 per cent duty would be a great shock to the British industry and undoubtedly result in some failures.

In England the industry is organized somewhat differently than here, both the home manufacturers and the importers of foreign cars being represented in the same body.

Development of Tools Provides Simpler Ways for Performing Specific Operations

New line of adjustable shell reamers makes use of five sizes of blade. One reamer has die-cast head and high speed steel cutter blades. Bushings improved for use in machine shop jigs.

By W. L. Carver

IN most of the recent developments in machine tool design the underlying tendency has been toward obvious or simpler ways of performing specific functions. As machine tools of this type cannot attain their full measure of utility unless equipped with small tools and accessories which are designed to similar standards of simplicity, utility and economy, it is reasonable to expect a similar trend of development in this field. That such a trend exists in the small tool field is proved by three recent announcements. One of these concerns a reamer in which only the blades are made of high speed steel, a design which creates new standards of economy. The second is of a simplified adjustable reamer, while the third refers to a system of jig bushings which eliminates practically all of the troubles in operation and replacement that were common with the older designs.

A die cast body is the unique feature of the Conradson reamer, a product of the Conradson Tool Corporation of 2539 Woodward Avenue, Detroit. While the entire head of the usual high-speed reamer is cut from high speed steel bar or built up with high speed blades bolted or brazed into a body of medium carbon steel, the high speed steel blades of this construction are dovetailed into a die cast head which may be of either the shell or chucking type. The aluminum-copper-zinc alloy is stated to have a tensile strength of 50,000 lb. per sq. in. and a ductility equal to that of machine steel.

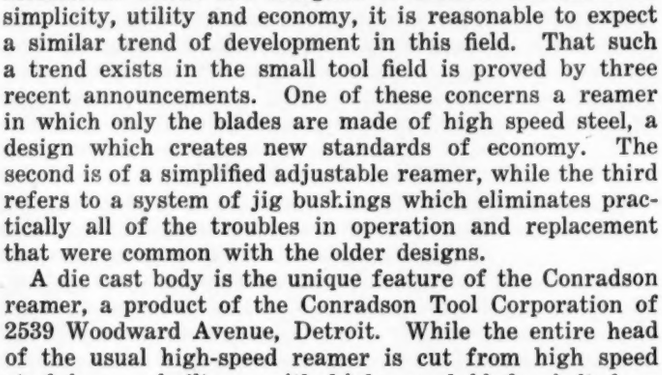


Fig. 1—Conradson reamer, which has high speed steel blades mounted in a die cast body

Fig. 2—Connell adjustable steel reamer

Fig. 3—Method of clamping blades in Connell reamers

Fig. 4—Eccentric lock liner or master bushing

Fig. 5—Flat head eccentric lock wearing bushing

Fig. 6—Knurled head eccentric lock bushing, used where two or more operations are performed at the same point

Fig. 7—Free lock liner bushings used for larger sizes

Fig. 8—Free lock knurled head bushings used in conjunction with type represented by Fig. 8

As shown in Fig. 1, the blades are seated deeply in the die casting and extend 3/32 in. below the body to permit clean facing of the bottom of the hole. As the die-cast body replaces the conventional construction, bores are standard, permitting the use of the reamer with standard arbors. At present these reamers can be provided in 1 3/16 and 1¼ in. diameter, although it is intended to supply them in standard sizes, from 1 in. to 5 in. diameter inclusive. The arrangement for chip clearance is such that the smaller reamers can be ground down to 1/16 in. less than nominal size, while ¼ in. range below nominal is possible with the 5 in. size. For unusual purposes special heads can be supplied upon order.

Simplification the Keynote

Unusual simplicity characterizes the Connell line of adjustable reamers which are made by the Brown-McClaren Manufacturing Co. of Detroit. Only five sizes of blades are required for the entire line of shell reamers ranging in size from 1 to 7 in., inclusive. As illustrated by Fig. 2, six high speed blades are set into milled slots in the head. The depth of these slots is the least at the nose of the reamer and the blades have a corresponding taper. Therefore the cutting edges of the blade remain parallel as they are advanced by the threaded adjusting collar at the upper end of the body. The adjusting collar is rotated by spanner wrench and locked by a dog-pointed set screw which engages with the same slots that carry the adjustable blades. While in service, the blades are clamped against the bottom and rear wall of the slots by a clamp screw the head of which engages with a notch, as shown in Fig. 3.

When the cutter is worn below the desired size, these screws and the set screw in the adjusting ring are released; the latter is then turned up, causing the blades to advance and move outward. Then the adjusting ring and blades are locked and the cutter is ground to the desired size. As the blades advance at each adjustment, the tips can be reground for bottoming work. While five sizes of blades are required for adjustable shell reamers ranging from 1 to 7 in. in diameter, three sizes are used for adjustable chucking reamers of 1 in. to 3 in. diameter and four sizes are used for the same range of adjustable hand reamer sizes. This company also manufactures a complete line of standard arbors for shell reamers in addition to one-piece chucking reamers and special line reaming units.

While these two developments are related to the machine side of the production scheme, the third is tied up with the accompanying jig equipment. The question of drill bushing wear and the troubles incidental to the usual slip bushing both find their solution in the Briney standard jig bushing made by the Jig Bushing Co. of Pontiac, Mich. In this system a master bushing is installed in the jig in accordance with conventional prac-

tice. However, this master is equipped with a locking surface which, in conjunction with a similar surface on the slip bushing, prevents the latter from turning or riding upon the drill. This feature is subordinated to the possibility of replacing worn bushings quickly, as these bushings are made in standard sizes that meet with the usual dimensional requirements.

For a Single Permanent Operation

When a bushing is to be installed for a single permanent operation, such as drilling or reaming, the jig frame is bored and the hole located in the usual manner. A master bushing or liner is then installed, after having been ground outside to fit the previously bored hole. This liner comes from the producer with the external surface in the rough, as this practice allows the tool room to fit the liner to the hole in the jig without having to perform repeated boring and measuring operations to meet a ground size. As illustrated by Fig. 4, this liner is a conventional shouldered bushing with the addition of an inverted eccentric conical surface inside the upper end. The drill bushing illustrated by Fig. 5 is slipped into the master liner and rotated until a similar eccentric conical head is locked by binding in the eccentric lock in the master bushing. As the centers of the two eccentric conical frustums are very close, but not actually common, the locking action is substantial and resists the action of tools and chips. When the wearing bushing becomes inaccurate, due to continued service, it is unlocked by means of a punch or drift, a small hole being drilled in the top of the bushing for that purpose.

For the smaller sizes, a conical lock slip bushing is also furnished for layouts where two or more operations, such as drilling followed by reaming, are performed at the same point. As illustrated by Fig. 6, this type has the same locking provisions as the flat head type, but is also fitted with a knurled collar at the top. The increased diameter incidental to the knurled collar is utilized to form a coolant trough at the top of the bushing. For the larger sizes, where slip bushings are required, the eccentric lock is not entirely practical. Therefore a design known as the free lock type has been developed. Figs. 7 and 8 illustrate this construction, which is obviously similar in purpose to that of the conical lock but eliminates the binding feature, being similar in principle to a bayonet joint.

The entire standard line includes 63 blanks with 7 outside diameters of liners, ranging from ½ in. to 2¾ in. All of the bushings are hardened and ground or lapped to internal sizes, the sole exception being the external diameter of the master liners, which is turned, as explained previously. Each size is numbered, and interchangeable wearing bushings can be obtained from service stock. Appreciating the necessity for accuracy in parts of this nature, the manufacturer has provided a most accurate gaging system which includes Johanssen blocks and fluid gages. Low carbon steel is used for all parts, case hardening preceding the final grinding.

Integral Bead Tire Put Into Production

KELLY-SPRINGFIELD TIRE CO. has announced the adoption of an entirely new method of tire construction in which the bead of the tire, instead of being made as a separate piece which afterward is bound between the layers of cord fabric, is made an integral part of the tire.

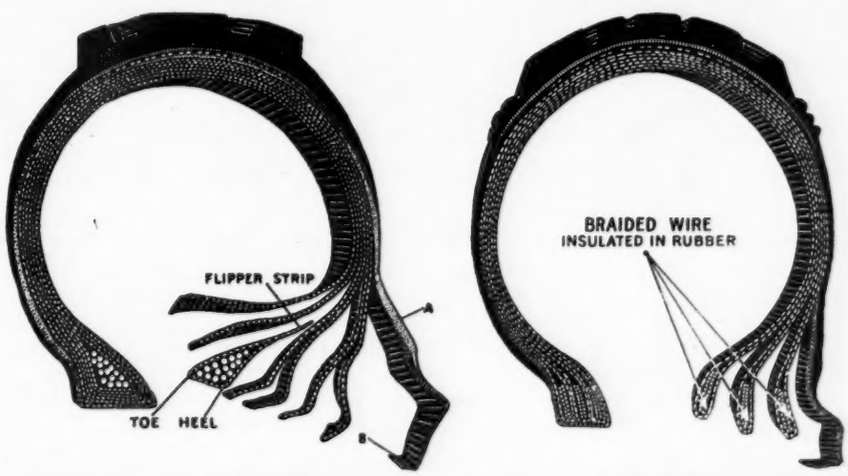
As shown in accompanying cuts, the strips of cord fabric are carried around the bead wires which are therefore inserted between adjacent layers of the fabric. Instead of using several thousand short cords each of which is cut off at the bead, the new method of manufacture employs about 460 long cords which are wrapped around the beads and are said to make a stronger and more flexible carcass than is otherwise obtained. This greater flexibility is attributed largely to the absence of a flipper strip ordinarily employed.

In the new construction cords are said to be continuous from the beginning of the inner ply to the end of the outer ply. It is claimed that the bead cannot break out or separate from the plies of fabric and the absence of the flipper strip is said to minimize localization of side wall stresses which sometimes occur at the "hinge" point formed by the edge of the flipper strip.

This new process is said to be applicable to the manufacture of both high and low pressure tires, though of greatest importance in the balloon type in which maximum flexibility is essential. Tread and breaker strip construction is understood to remain as heretofore.

The new tires are manufactured on machines developed and built by the Cord Tire Machine Co. of Cleveland, Ohio, and installed in the Cumberland, Md., plant of the Kelly-Springfield company.

THE European Grand Prix race will be held for the third time in 1925. It is believed that the 122 cu. in. displacement and the 1430 lb. minimum weight limits will be retained. The country in which the race is to be run has not yet been decided upon, but it is intimated that England and Belgium are being considered.



Left—Old method of constructing tire with separate bead and flipper strip cemented between plies and inclosed by chafer strip, A-B. Right—New method of construction used by Kelly-Springfield, in which the plies of cord fabric are wrapped around braided wire insulated in rubber

Final Coat of Latest Pyroxylin Finish Gives Gloss Without Polishing

Primer, putty glaze and surfacer coats in Mimax system have oil and varnish base. Completed job is said to be entirely free from so called "orange peel" effect.

A PYROXYLIN finish which is said to give an excellent gloss without polishing of the final coat and which is claimed to be entirely free from the "orange peel effect" which characterizes some pyroxylin finishes now is being marketed by the Pittsburgh Plate Glass Co. under the trade name of Mimax.

Primer and surfacer coats made from oil and varnish base materials are used with this system, since they are believed by the makers of Mimax finishing materials to be superior to pyroxylin base fillers in the present state of the art, although it is realized that further development work may result in the production of suitable nitrocellulose undercoats.

Mimax finish is built up by the application of one coat of primer, one of putty glaze, two of surfacer and three of pyroxylin enamel. These materials are intended either for baking, force drying or natural air drying, according to the facilities at hand and in accordance with the accompanying table. This finish is reported to be the outgrowth of experiments instituted by the Pittsburgh Plate Glass Co. as long ago as 1908.

During the development period tests were made with both pyroxylin base undercoats and with those of the conventional oil and varnish type with the ultimate result that primer, putty and surfacer, all of which bear the name Mimax and are constructed on an oil and varnish base were developed. These can be baked at 300 deg. Fahr. for 1½ hr., force dried for periods ranging from 1½ to 4 hr. or air dried from 3 to 24 hr., according to facilities at hand and the particular coat in question.

Usual precautions for preparing a clean metal surface are taken, after which the red oxide Mimax primer is applied. In production work where baking ovens are available, the primer is baked 1½ hr. at 300 deg. Fahr. This coat is followed by one of Mimax putty, which is baked for the same period at a temperature of 200 deg. Fahr. Two coats of Mimax Surfacer, each of which is baked 1½ hr. at 300 deg. Fahr., next are applied. When dry they are rubbed to a smooth surface with wet sandpaper, after which moisture is evaporated by baking 1 hr. at 200 deg. Fahr.

This prepares the job for the final coats of Mimax pyroxylin enamel, which preferably are three in number, although two are said to give a good appearance in some cases. The extra time and cost of a third coat, however, are justified by a better quality of finish. The first pyroxylin coat is a mixture of equal parts of Mimax thinner and Mimax enamel, the latter being a nitro-cellulose lacquer containing the pigment which gives the desired color. After this coat has been dried for a half hour at 125 deg. Fahr., it is rubbed with wet sandpaper. When moisture has evaporated, a second coat, the same as the preceding one, is applied and dried for the same time at the same temperature. When dry it is rubbed to a smooth surface with FFF pumice and water.

Quality of Finish

Quality of the finish is said to depend largely upon the care used in bringing up a smooth surface on the first two enamel coats, but, unlike some other pyroxylin finishes, after the final coat is applied no polishing is required. It is said to be much better to spend such time as is necessary to sand and rub the first two coats of enamel than to spend it all on the final coat. The luster of the final coat is said to be uniform and equal to that produced by rubbing, while all mottled appearance is absent.

If for any reason a rubbed third coat of enamel is desired, it can be rubbed with satisfactory results. In this case the reduction with equal parts of enamel and thinner is followed for the final coat as with the two preceding ones. In either case the characteristic durability of the pyroxylin enamel finish is secured.

Where striping is desired it is done in the ordinary way over the finished surface, using japan colors reduced to the proper consistency with finishing varnish and a little turpentine.

In the following table is given a schedule of finishing operations, the time required for drying by baking, force drying or natural drying being included. In every case all of the materials used bear the trade name Mimax and the temperatures are in degrees Fahrenheit. It is said to be possible to complete the finishing operations from bare metal to final coat in a single day.

Schedule of Operations, Mimax Finishing System

	Bake	Force Dry	Air Dry
1st Operation	Clean metal	Clean metal	Clean metal
2nd Operation	Apply primer	Apply primer	Apply primer
	Bake 1½ hr. at 300 deg.	Force dry 4 hr. at 160 deg.	Air dry 24 hr.
3rd Operation	Putty glaze	Putty glaze	Putty glaze
	Bake 1½ hr. at 200 deg.	Force dry 2 hr. at 160 deg.	Air dry 4 hr.
4th Operation	Apply surfacer	Apply surfacer	Apply surfacer
	Bake 1½ hr. at 300 deg.	Force dry 4 hr. at 160 deg.	Air dry 6 hr.
5th Operation	Apply second coat surfacer	Apply second coat surfacer	Apply second coat surfacer
	Bake 1½ hr. at 300 deg.	Force dry 4 hr. at 160 deg.	Air dry 6 hr.
6th Operation	Sand out surfacer	Sand out surfacer	Sand out surfacer
7th Operation	Dry out surfacer	Dry out surfacer	Dry out surfacer
	Bake 1 hr. at 200 deg.	Force dry 1½ hr. at 160 deg.	Air dry 3 hr.
8th Operation	Apply enamel	Apply enamel	Apply enamel
	Bake ½ hr. at 125 deg.	Force dry ½ hr. at 125 deg.	Air dry 2 hr.
9th Operation	Sand enamel	Sand enamel	Sand enamel
	Apply second coat enamel	Apply second coat enamel	Apply second coat enamel
10th Operation	Bake ½ hr. at 125 deg.	Bake ½ hr. at 125 deg.	Air dry 2 hr.
11th Operation	Rub out enamel	Rub out enamel	Rub out enamel
12th Operation	Apply third coat enamel	Apply third coat enamel	Apply third coat enamel

Gradual Expansion of Egyptian Market for Automotive Products Likely

Government is keenly interested in growth of motor transport to aid economic development of country. Handicap of poor roads favorable to lighter vehicles.

By E. C. Petrie

DURING the past year a number of inquiries for agencies for automobiles, lorries, buses, tractors, motorcycles and tires have emanated from Egypt. This indicates that there is at least a demand for every variety of motor product in a market where the estimated registration of passenger cars was 6000 at the end of last year. In addition, the number of trucks was put down at 650.

Vicissitudes of automotive supply and demand in Egypt have been very acute. In the immediate post-war period the demand could not be met, but about September, 1920, with large consignments arriving, a severe slump set in, and by the summer of 1921 automobiles could not be sold at half their original cost.

At the end of 1921 about 400 cars were in the hands of speculators who had ordered during the boom and could not find buyers. Their difficulties were enhanced by the fact that many cars and trucks utilized for military operations in Palestine were thrown upon the market. Gradually, however, the surplus new vehicles, as well as the ex-army material, have been absorbed.

When J. Walter Drake of the N. A. C. C. visited Egypt last year he gave it as his opinion that the country was improving rapidly under the British protectorate and that the wide introduction of motor travel must be realized in the near future. This is very possible, as the Government is keenly interested in the introduction of motor transport as a means of economically developing the country.

As proof of its sincerity ten students recently were sent to the United States under its auspices for a three-year course in motor transportation. Eventually these students will take up posts at home in the capacity of advisors in the use of motor trucks.

Good Field for Truck Service

There are many fields in which trucks could be used to advantage in Egypt. Transport of dates from Siwa, of grapes from Fayum, of nitrates from the deserts bordering the Upper Nile, of phosphates and manganese from the Red Sea and Sinai areas, of cotton and grain from the Delta and the distribution of the fish products of Mataria all would benefit by the wide introduction of the truck.

Poor roads at present are a great handicap to the general adoption of mechanical transport. In many parts of the Delta stone is difficult to obtain, while bridging also presents an acute problem. Port Said, for instance, because of its insular position, has few facilities for development by means of motor transport.

In the more arid parts of the country experiments have been made in the construction of roads with ordinary iron wire netting. It has been found that these temporary roads will support heavy traffic for a considerable period, especially if strengthened over the wheel tracks or if a bed of rushes is laid before putting down the wire.

In the more prosperous parts of the country considerable attention is being given to the construction of concrete roads. Locally manufactured cement generally is used for this work, and as labor is cheap the cost of construction is not excessive. Porphyry, granite, limestone, and sandstone can be obtained for road building, but the cheap transport of this material to points where it must be used presents a considerable problem to the Public Works authorities.

Egypt Is Distribution Point

During certain periods of the year the open desert is easily negotiable to cars such as Fords, and a considerable amount of traffic passes in this way between Cairo and Suez. Cairo and Alexandria are connected by a good road 192 miles in length, while another good road connects Benha with Ismailia, on the Suez Canal.

Apart from its value as a market for American motor products Egypt is important as being a distribution center for most of the Levantine and Near East countries. Less than two years ago direct steamboat communication was etablished between the United States and Alexandria and Port Said, and either of these two ports can be made important distributing points for Palestine, Syria, Cyprus, Turkey, Greece, Iraq, the Red Sea countries, Abyssinia and British Sudan.

Although Egypt is nominally a possession of Great Britain, sentiment in no way enters into commercial transactions and the automotive products of Italy, France, Germany and the United States are purchased purely on their merits. The general tariff on motor vehicles entering Egypt is 8 per cent ad valorem.

Import trade generally is conducted by firms established in Cairo and Alexandria, with sub-agents distributed throughout the country. The sales policy of the more progressive firms is to consign to reputable dealers and to grant price reductions on cars in stock when such reductions are made in the country of origin. The fixed price policy in selling motor vehicles, however, is almost unknown, although a well known American maker is endeavoring to create a precedent in this respect.

Literature may be either in English or French and should include views of the engine and chassis, together with charts showing mechanical operations. One American representative has realized increased sales as a result of publishing literature in Arabic, the most widely

read vernacular in the country. Egyptians also are very susceptible to film advertising.

American manufacturers have more to fear from Italy and France than they have from the competition of Great Britain and Germany. It is highly probable that the Italian Chamber of Commerce in Alexandria will hold a sample exhibition there next year. If this project materializes only Italian products and manufactures will be on view, and it is certain that motor vehicles will figure prominently at this show.

Long Credits Needed

Competition best can be met by those manufacturers who send their products out on a consignment basis, for when cars have to be paid for before shipment agents are not able to carry adequate stocks. Some firms have insisted on a policy of forcing the agent to guarantee the sale of a stipulated number of cars per annum, but in such an uncertain market as Egypt this is an almost impossible method of trying to do business.

Instances can be cited where local firms have dropped the agencies of British motor products in favor of American, thereby getting better terms, better attention, and vehicles better suited to local conditions. Other local agents have complained that there is no inclination on the part of British firms to push trade with vigor and that their representatives rarely visit the country.

Comparisons generally are made with the aggressive methods of American firms. It is not surprising, therefore, that a large number of agents who formerly represented automotive products from both countries now handle American products entirely.

Home manufacture of motor products virtually is limited to body building, although some attention has been paid to the local manufacture of parts. Body building, however, is expensive, as most materials used, even wood, have to be imported. For this reason the proportion of complete vehicles to chassis imported is relatively greater than is the case with other countries in a similar state of development. A passing effort has been made to manufacture tires in Egypt. It is stated that a Ford assembly plant is to be erected in the near future.

Considerable attention needs to be paid to the development of better service. The policy of many dealers is to make as much profit as possible and the price charged for the supplying of spare parts and repairs is usually excessive. There is not a great demand for portable servicing equipment, however, for native labor is cheap, and breakdowns in general can be got to the nearest garage speedily and cheaply.

Export Records

American exports to Egypt for 1913 and the completed post-war years is as follows:

Year	Cars	Trucks	Motor-cycles	Tractors	Parts	Tires
1913....	16	..	..	..	$295	.....
1919....	230	15	44	29	27,886	$25,881
1920....	1,558	74	284	170	104,582	150,423
1921....	212	44	12	9	129,367	53,158
1922....	374	27	21	7	63,613	76,479
1923....	219	2	69	2	70,233	66,830

During the first half of the present year Egypt has taken from America 143 passenger cars, 2 trucks, and parts and tires to the value of $34,408 and $16,058, respectively.

According to official figures, 1010 automobiles were imported by Egypt during the first nine months of 1923, against 1921 during the ecorresponding period of 1922. The figures for 1923 show that the number of American cars entering Egypt was 506, a considerably higher figure than that shown in the table. During the same period Italy sent 220 cars; France, 165; Germany, 67; Great Britain, 30; and Austria, 8.

Unit value of the American car was £E.126; Italian, £E.227; French, £E.250; German, £E.310; British, £E.302; Austrian, £E.518. First cost price is a dominating factor with Egyptian buyers. It must not be assumed from this that there is no opening for luxury cars in Egypt, but, generally speaking, the potential buyers of such vehicles make their purchases while on their summer visit to Europe.

The most popular types of cars are 12 hp. to 15 hp. limousines of finished appearance and costing between £E.300 and £E.400; 5-seater torpedos or landaulets of 10 hp. costing between £E.200 and £E.300; and light 2-3-seaters of 5 hp. costing between £E.150 and £E.200. Right hand drive and magneto ignition are preferred, while Mohammedans often demand closed models.

About 90 per cent of the 650 trucks in Egypt are of British manufacture, Daimlers and Leylands leading the field. This figure is a long way from the saturation point, but post-war sales have not been a tithe of what they might have been owing to the flooding of this market with General Allenby's surplus military stock.

Light trucks are mostly used in the country districts, owing to the poorness of the roads. The configuration of the country is such that trucks will be used widely in the future for feeder services along the fertile stretch bordering the Upper Nile, and for the railways and waterways of the Delta. Trucks driven by gas producer plants have been tried with success by the Egyptian army, while Citroen-Kegresse tractors have been used for big game hunting and exploration work over the desert areas.

Taxicab Market Growing

Taxicabs have sprung into considerable favor. There are now about 700 vehicles of this type in Cairo and upwards of 400 in Alexandria. From the moment that taxis were introduced into the streets of Cairo in 1921 and undercut the horsedrawn arabieh with a minimum tariff of 20 cents to any point within the city, this method of urban transport became very popular with Egyptians.

The Omnibus Company of Cairo decided a few years ago to supplement their horse-drawn vehicles with motor-buses, and the elimination of the horse for this work has been proceeding steadily ever since. Hitherto most of the buses used in Cairo have been operating as feeders to the tramways, the type of vehicle favored being a 34-passenger single-decker, although a number of Ford 10-seaters are used. Several of the larger provincial towns are following the lead of Cairo by introducing local motorbus services.

Light types, such as Fordsons, Cases and Austins are considered the most suitable. Cooperative buying is favored by some districts. What is wanted to develop the demand for tractors in Egypt are data showing low operating costs, while repair facilities must be very considerably extended. The close network of irrigation canals in the Delta district is against the introduction of power-farming methods.

Although oil is found in limited quantities on both sides of the Gulf of Suez and farther south on the Red Sea littoral, considerable quantities of gasoline are imported, mainly from U.S.A., Persia, and the Dutch East Indies. It is recognized generally that the country never can be independent of imported gasoline, but endeavors have been made to encourage the production of power alcohol to supplement the oil found locally.

Self-Contained Magneto Generator Designed for Truck and Tractor Lighting

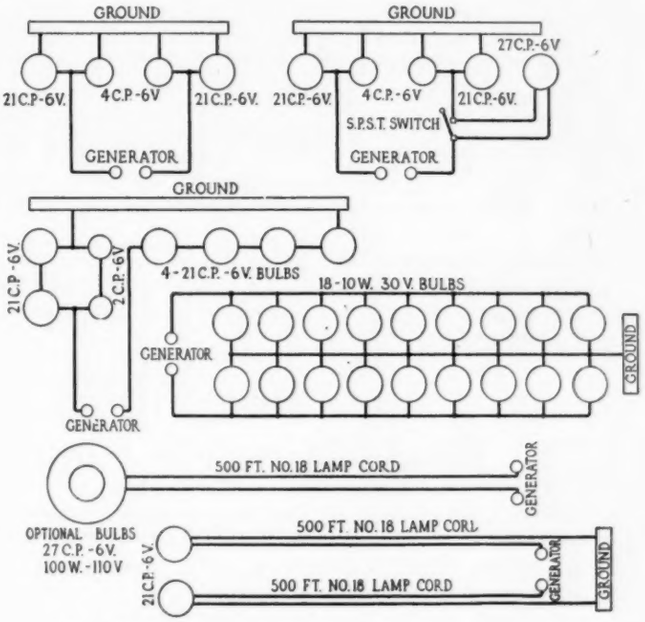
Less than one-half volt and less than three-tenths ampere shown as a difference in output at engine speeds from 800 to 3,000 r.p.m. Lubrication effected from the oiling system of the engine.

AN electric generator which can be used for generating current for lighting purposes on tractors and heavy duty trucks where the use of a storage battery may involve difficulties, has been brought out by the Harris Electric Co. of San Francisco, Cal. It is of the magneto type, is automatic in control and has two entirely separate armature or inductor circuits, each of which supplies current to a separate lighting circuit, so that the burning out of a bulb in one circuit will not affect the operation of the lamps in the other circuit.

The generator is of the inductor type, in which there are no moving wires, and generates alternating currents. Its frame or housing is composed of two identical die castings that are bolted together, the laminated pole shoes being cast in. The magnetic flux originates in flat or straight permanent magnets set into recesses formed in the halves of the housing and held in place by screws, as shown in the sectional views. The two pairs of permanent magnets and the two sets of pole shoes together form a single magnetic circuit which is broken at two points by the rotor tunnels.

There are two rotors, one below and one above the axis of the machine, each being surrounded by inductor coils in which the current is generated, the coils lying in slots in the pole shoes alongside the rotors and curving around the rotor shaft at the ends. It is obvious from the cross-sectional view that as the rotors rotate the flux passes through the coils first in one and then in the opposite direction, and it is this reversal of the flux through the coils which is responsible for the inductive action. The rotors are 1⅜ in. in diameter and weigh only 14 oz. each.

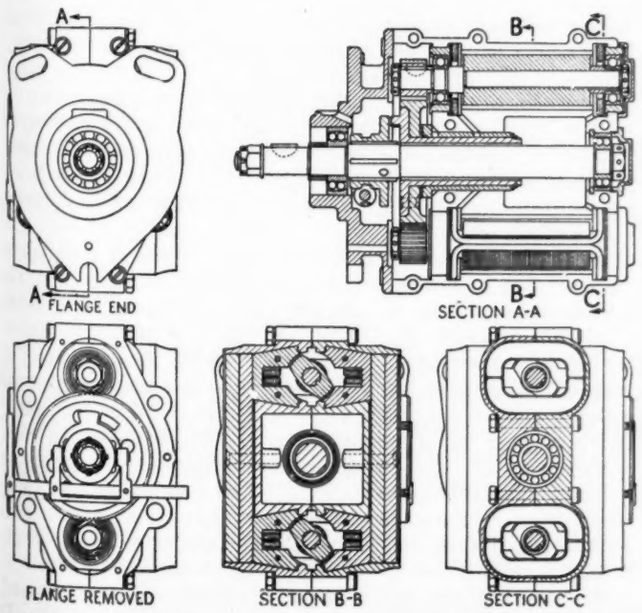
The driving shaft is located at the center of the frame and carries a positive clutch which is ordinarily disengaged so that the rotors of the generator remain at rest. When it is desired to light the lamps, this clutch is engaged, and the clutch therefore serves also as a lighting switch. The driving shaft also carries a spur gear which meshes with smaller gears on the rotor shafts, causing them to revolve at three and one-half times its own speed.



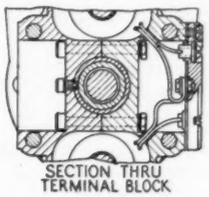
Speed-voltage and speed-amperage curves of generator on circuits comprising one 6-volt 21 c.p. and one 6-volt 2 c.p. bulbs

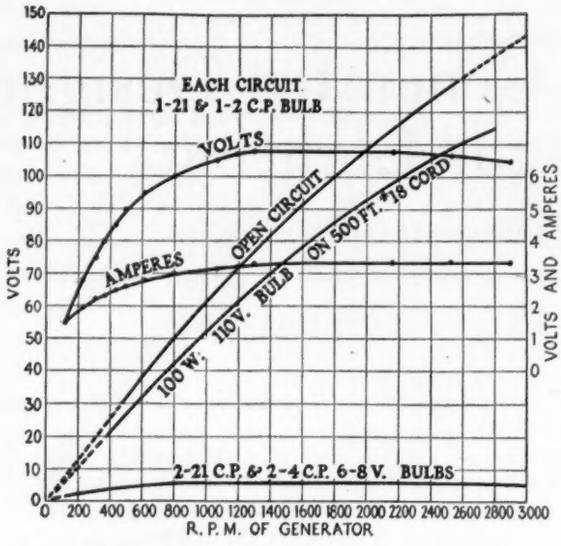
It is claimed for this generator that it is self-regulating to the extent of meeting all requirements of vehicle lighting, there being less than one-half volt and less than 0.3 amp. difference in the output at engine speeds of 800 and 3000 r.p.m., when the load consists of the usual 6-volt dash-light, tail light and two headlights. The control is entirely inherent.

With a magneto generator there naturally is not as strong a tendency for the voltage to rise with increase in speed as there is in a shunt wound dynamo, as the field strength cannot increase. The regulating effect is undoubtedly largely due to armature reaction, but hysteresis and eddy



End and sectional views of Aladdin-Duplex generator





Speed-voltage curves of generator on open circuit, high resistance circuit and low resistance circuit

current losses also play a part, the former increasing in direct proportion and the latter as the square of the speed. Hence these losses are greater at high rotor speeds, which tends to keep down the generator voltage.

A peculiar feature of this generator is that it gives a comparatively very high voltage on open circuit, in which case, of course, there is no armature reaction. Advantage can be taken of this feature to supply current to lamps at a considerable distance. It is claimed that a 100 watt 110 volt bulb at the end of 1000 ft. of No. 18 lamp cord may be lighted up to full brilliancy, and a 6-volt 27 cp. bulb when substituted for this high voltage bulb will also light up fully. The explanation evidently is that the low voltage lamp consumes several times as much current as the high voltage lamp and that the armature reaction and other effects due to this extra current pull down the terminal voltage from 110 to 6.

The usual arrangement of the lights on trucks where this generator is used is to connect the tail light in parallel with one head light and the dash light in parallel with the other, each pair being connected between one of the generator terminals and ground. The two circuits are then entirely independent. The control of the voltage in each circuit depends upon the current flowing in that circuit and the two circuits may be used to furnish different voltages at the same time. Some of the possible "hook-ups" are illustrated by the diagrams herewith.

We understand that this generator, which is known as the Aladdin-Duplex, has been in practical use for two years. It is manufactured on a regular production basis, all parts being made to go and no-go gages. All three shafts are supported on ball bearings. Lubrication is effected from the oiling system of the engine, oil entering the generator housing through the mounting flange and returning to the crankcase through a drain tube. With the exception of the coils, all of the important parts of the generator can be removed and replaced without splitting the case.

Double Friction Clutch for Railcar Transmission

A NEW arrangement of friction clutches, which is claimed to make a transmission similar to that used on automobiles, suitable for use on railcars with engines up to 300 hp., was described in a paper recently presented by Jean Fieux before the Society for the Promotion of National Industry in France.

M. Fieux says that the difficulty with the ordinary automobile transmission is that if the power is increased much beyond that used in automobile practice the inertia of the revolving parts becomes so great that it is practically impossible to shift gears without injuring the teeth. To insure the proper control of the vehicle it is necessary that the clutch should be quite gradual in action, as well as very durable.

These two requirements are not incompatible if the clutch comprises two groups of frictional members arranged in series on the transmission shaft. One of these clutches takes up prolonged slipping; it is made with very large frictional surfaces, preferably metallic and abundantly lubricated. This clutch automatically limits the torque load which can be imposed upon the engine.

The other clutch is so designed as to make shifting of the gears easy and is of very reduced dimensions. It permits of completely interrupting the transmission of power almost instantly. This clutch is of the "spiral" type, a helix of flat steel being arranged as the driven member inside a steel drum. In operation this helix is applied to the drum not only by the torque transmitted, but also by the centrifugal force on it, and the clutch therefore holds the more the higher the speed.

This double clutch is said to have been used with great success on a motor car on the State Railways which has already covered 15,000 miles and it will shortly be applied to ten other railcars.

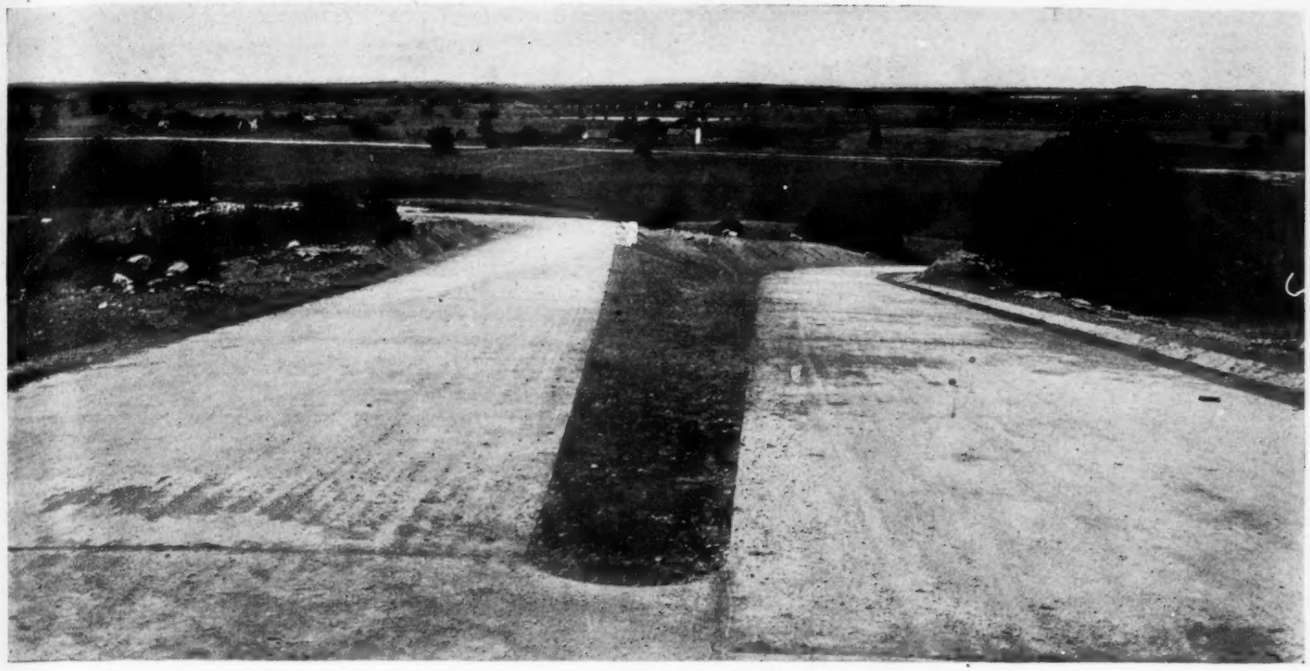
AN instrument termed the James Brake Inspection Decelerometer and intended for the use of police and others who desire to determine the effectiveness of brakes on any vehicle, is being manufactured by the American Instrument Co. of Washington, D. C. It is an indicating instrument and follows a design laid down by W. S. James, formerly of the Bureau of Standards.

Operation is based on the fact that a pendulum carried in a moving vehicle and free to swing in the direction of motion of a vehicle will be deflected from its normal vertical position when the vehicle changes speed, the amount of deflection being proportioned to the rate of acceleration or deceleration.

In this case the motion is damped by oil and its amount indicated by a hand moving over a dial as shown in the accompanying cut. In use the instrument, which is quite rugged, is placed on the floor of the car with the arrow marked on the dial pointing forward in the direction of motion. When the brakes are applied the indicating hand swings over the dial and comes to rest for a second or more at a point corresponding to the deceleration rate, which is easily read off in feet to stop from 20 m.p.h.

This decelerometer can be used on any vehicle, regardless of size and weight, and the speed from which the stop is made is immaterial. In all cases the instrument reads automatically distance to stop from 20 m.p.h.

The case of the instrument is cylindrical in form and measures about 6 in. in diameter by 7 in. in length. It weighs 10 lb.



General Motors proving ground as seen from junction of concrete Y. Road on right has 11.6 per cent grade, while that at left rises on 7.1 per cent gradient. White line in middle distance is level straightaway

How Work Is Progressing on the General Motors Proving Ground

Almost one mile of level straight away and some roads giving long grades of 7.1, 10, and 11.6 per cent already near completion. Buildings being erected.

A LARGE force of men for some time has been at work on the General Motors Proving Ground, near Milford, Mich. The project is by no means completed, but sufficient progress has been made to give a clear idea of some parts of the undertaking. The tract is convenient to the principal General Motors car and truck plants located at Detroit, Lansing, Flint and Pontiac, all of which are less than 50 miles distant.

Approximately 1125 acres are included in the proving ground area. The terrain embraces a level valley and adjacent hills, rising 250 ft. above the valley floor.

An idea of the general character of the country is furnished by the accompanying illustration, made from a photograph taken from the sight of a building being erected for living quarters of the staff.

The primary purpose of the proving ground is to provide desired road conditions of various types and other facilities for making road tests of motor vehicles, such as tests for endurance, speed, fuel consumption, acceleration, hill climbing, cooling, braking, riding qualities and so on.

Suitable conditions for making tests of this character are difficult to find on public highways, because of the lack of proper surfaces of suitable grade and length and because tests on public roads are being increasingly interfered with by traffic. At the proving ground, tests will be carried out on General Motors property without danger to pedestrians or to vehicles other than those undergoing tests.

Both concrete and gravel roads are under construction. One section of concrete road 20 ft. wide is 5114 ft. long. It is absolutely level and straight, with gravelled loops at each end for turning around. This section will be utilized in making acceleration and fuel economy tests among others. Its length eventually will be increased to 1⅜ miles, when some of the fills on the ground adjoining the section have had time to settle.

Hills for Testing Cars

Another section of concrete roadway provides adequate tests for hill climbing ability. This is built in the form of the letter Y. One branch begins at an elevation of 980.9 ft. above the sea level and ascends a hill, following a uniform grade of 11.6 per cent for 1359 ft., or approximately a quarter of a mile. A curve, 200 ft. in length, then leads to a horizontal run of 300 ft., which is followed by another 200-ft. curve and a run of 351 ft. at 10 per cent grade.

A 150-ft. curve then reaches the summit of the hill at an elevation of 1213 ft., making a total rise of 231.1 ft. and a total length of 2810 ft. or .53 miles.

All of this road is 20 ft. wide. After it has reached the summit of the hill, it is continued as a gravel road, 20 ft. wide, which makes a circuit and finally merges with

View from building erected for living quarters, General Motors proving ground. Note varying character of topography

the gravel road mentioned later. The other branch of the Y is also of 20-ft. concrete, uniform in grade at 7.1 per cent, and 1261 ft. long. A portion of the main stem of the Y is absolutely level.

A gravel road begins at one end of the concrete straightaway and follows a circuit until it joins the other end of the straightaway. This "loop" is not level, but it has no grade steeper than 6 per cent and the sharpest curve at its length is 5 deg. All the turns are well banked, and when the straightaway length is figured in, the loop forms a track 3.8 miles in length, which is suitable for carrying on continuous tests at high speed.

Leading out of this track, with its light grades and easy turns, is a circuitous gravel road that is full of tests for any car. There are a number of sharp turns, and the grade at one point is 24 per cent.

Buildings on the Grounds

For making the necessary repairs and adjustments to cars undergoing tests, a garage building 60 ft. x 200 ft. has been erected and equipped suitably for its purpose. There is a small machine shop, with the usual equipment, storage for supplies and so on.

Another building will provide living quarters for the personnel stationed permanently on the proving ground and accommodate parties from divisions of the General Motors Corp. whose cars are being tested.

One advantage of the proving ground is that all distances and grades are known accurately, and all cars under test can be subjected to identical conditions. The level sections are not approximately, but exactly level and the grades are uniform.

It is believed by General Motors officials, who are intensely interested in such matters, that the facts brought out by tests at the proving ground cannot fail to be of immense value to the automotive industry.

The organization stationed at the proving ground for the maintenance of the roads, operation of the living quarters and conduct of tests, will be under the supervision of F. M. Holden, who will report to the General Technical Committee of General Motors and its Sub-Committee. This committee is headed by Alfred P. Sloan, Jr., president, and includes his technical assistant, H. M. Crane, C. S. Mott, C. F. Kettering and the chief engineers of the vehicle divisions.

At the Machine Tool Exhibit

ONE of the machine tools to be shown at the New Haven Machine Tool Exhibit, Sept. 5 to 18, and also at the Steel Exhibitition in Boston, Sept. 22 to 26, is an internal grinding machine developed by the Heald Machine Co., Worcester, Mass.

This machine, which has been running under tests for several months, is built on the lines of the present Style Heald No. 72 internal grinder, with a hydraulic control for the table, but all the other units are entirely new.

An indicator controls the size of the work to the required limits, and also controls the operation of the diamond and the withdrawal of the table when the work is finished. After the work has been chucked and the machine started, a variable feed cross-slide table automatically feeds the wheel into the work to its maximum. As the hole approaches its finished size, the indicator controlling the cross feed reduces it to a fine feed of 0.0002 in. At the same time the diamond automatically trues the wheel. It is claimed that the fine feed and the dressing of the wheel at this point in the operation prevent tapering or bell mouthing and give an excellent finish, maintaining very close limits in size without scrap.

Other new units of this machine that help toward high production are as follows:

A very rigid all-ball bearing workhead which requires no adjustment.

A wheelhead of the high duty type designed to run at high speed.

A quick acting wheelguard that instantly covers or uncovers the wheel.

Table travel control dogs of an entirely new design, with micrometer adjustment alterable while the machine is in operation.

It is expected that this new semi-automatic high speed production tool will create considerable interest.

Editorial

Slow but Sure

SIGNS of better business for the last half of 1924 continue to come in every week. Results of the latest questionnaire to tire dealers sent out monthly by the National Tire Dealers Association indicate that inventories of tires and tubes have been reduced very greatly. "Sales show a very large increase," the summary goes on to say. "Purchases are about fair. Collections are fair. A majority of members report business conditions fair."

This improvement in the retail tire field simply adds additional evidence in support of the belief that the bottom of the depression already has been passed.

The most marked gains, of course, are to be noted in the agricultural areas, but careful analysis of this increased prosperity makes evident that its effect on automobile buying in 1925 may be greater than in 1924. There can be no question that the wheat and corn farmers are in far better shape than they have been for several years. But all farmers do not grow wheat and corn. Moreover, a good many debts have been piled up by these men in the last few years. One close observer in Kansas estimates that 75 to 80 per cent of this year's record wheat crop will go to meet old obligations.

Nevertheless, the increased income of farmers in general is certain to have a favorable effect on automotive sales as well as on other lines of merchandise. The *New York Times* expresses the opinion that "this season should see the reestablishment of normal buying, giving the retailer some confidence for meeting the seasonable needs of his community and encouraging him in maintaining his stocks. . . . The wall of sales resistance has been weakened and it seemed only to require a revival of farm prosperity to complete the rout."

There is nothing to indicate any overwhelming advance in sales or production during the remaining months of 1924, but clear signals of continued improvement have arisen in every quarter.

Poison Gas

THERE can be little doubt that one of the most difficult as well as one of the most important problems that confronts the automotive industry today is that of eliminating from the exhaust of automobile and truck engines the extremely poisonous carbon monoxide which they contain. Deaths from such gas are by no means uncommon, while from the same cause illnesses varying from a mere headache or nausea to far more serious complaints are every day occurrences.

While the evidence may not be entirely conclusive, there are those who believe that a goodly percentage of automobile accidents are caused indirectly by carbon monoxide poisoning, the driver of the car or someone else exposed to the poisonous fumes having become partially unconscious or temporarily irresponsible due to the effects of the poison. However this may be, it is certain that unpleasant if not serious results are more than likely to occur, especially in the case of those continually exposed to exhaust fumes where traffic is dense.

Tests made by the Bureau of Mines and other unprejudiced authorities have shown repeatedly that as much as 8 or 10 per cent of carbon monoxide is not uncommon in the exhaust from car and truck engines, while lesser percentages are nearly always present.

Carbon monoxide is a product of the incomplete combustion of the carbon in fuel and is the result of an insufficient supply of air or of some conditions which fail to bring the carbon and the oxygen in the air into sufficiently intimate relation with the fuel during the time when combustion can be completed. Often it is attributed to the incomplete vaporization of the fuel, although it can and does occur under some circumstances when the fuel is vaporized fully.

Aside from its injurious effect, carbon monoxide represents a serious waste of fuel.

As traffic becomes more dense and fuel less volatile, conditions are certain to become worse rather than better unless the industries concerned take the matter in hand and find a solution. Already there are murmurs of restrictive if not punitive legislation which may bring automobile and fuel producers no end of trouble if nothing is done to forestall it by bringing about better conditions. There is no time like the present for starting an earnest search for a solution of this problem.

Compulsory Insurance

EXECUTIVES express different opinions about compulsory insurance. Five States in which it was proposed last year decided against it. This year it is coming up again in a greater number of legislatures. In some of them it may pass. The Conference on Street and Highway Safety, which met with Secretary Hoover recently, is not yet ready to make recommendations. One of the suggestions considered was that the rights of the creditor be made secondary to those of a person injured in an automobile accident in which the cars are not owned outright by the driver. This suggestion arose from the fact that less than 20 per cent of automobile owners carry liability insurance.

Companies financing sales include fire and theft insurance to protect themselves. An extension of conditions to include personal injuries and property damage would naturally follow. But there is a serious question as to the effect this insurance would have on the accident rate and on car sales.

Our Industry Today—

September Showing Slight Increase in Production with Sales Maintained at Fair Pace and Dealer Stocks Low

NEW YORK, Sept. 15—A slight increase in automobile producing schedules is noted the first half of the month, with promise of further strengthening during the remaining weeks. Employment is showing some gains in both automobile and parts producing centers. Sales are continuing at a fair pace and, with stocks low, dealers are ordering more cars from the factories.

Business has not developed to any extent in agricultural areas although there is some buying at shows held in conjunction with State fairs. Encouraging evidence is being given at these shows of farmer interest and the probability that the farmer will develop into an important factor in sales.

Consumers Getting Cars

All cars being shipped from factories to dealers are going directly into the hands of consumers. No surplus stocks are being accumulated. Actual consumer demand is governing operations and will continue to be the prevailing element in the upward movement of schedules.

Should September production show a 10 per cent increase over August, as is predicted in some quarters despite the fact that it has one less working day, it would bring output for the month to 295,334, a relatively high figure, not reaching the 327,506 mark of a year ago but mounting well beyond the 207,206 reported in September of 1922.

Third quarter production, so far, has proceeded more along the lines of the corresponding quarter of 1922, with output averaging 265,676 for July and August compared with 260,658 in the like two months two years ago. The average maintained in 1923 for those months was 286,567, a figure that was reached through the record made in July, August showing a pronounced drop.

Above Normal Pace

Except for the first few months, the pace followed in 1922 and carrying over into the first two months of 1923 was more nearly normal than the gait into which the industry swung in March, 1923, and continued without let-up through the rest of that year and far into 1924. The industry, therefore, is operating along somewhat higher levels than was the case in the relatively normal year.

The last quarter of 1922 produced an average of 235,008 cars and trucks and it is certain from present conditions in the sales field and the good outlook that the average in the last quarter of this year will be considerably higher.

September Business Disappoints Some

Sales Are Increasing But Not at Pace That Satisfies, Say Several Detroit Makers

DETROIT, Sept. 15—Coincident with a statement by the Ford Motor Co. that September is expected to set a new high sales mark over this month in any previous year, comes an expression from several other companies that business of the month to date has been disappointing in that it failed to develop any large increase over the business of July and August.

Summer Volume Keeps Up

There has been no let-up in the regular summer volume, in fact there have been increases, but there has been nothing as yet to indicate any material increases over the summer rate, these factories declare. Ford on the other hand experienced a large increase in business in the last ten days of August and is confident this improvement will continue through September.

Telegrams received by Ford from many of its branches throughout the country say dealers' stocks in these particular territories are cleared away and that with good business developing factory shipments must be increased. As a consequence production will be speeded up here and both retail sales and the production rate are expected to show a gain that may range as high as 30,000 over August.

Releases to parts makers and material suppliers for September and October are helping to get things moving at a better rate. Some of these releases were unexpected and for that reason all the more pleasing, and parts makers are in a somewhat better frame of mind. There is yet, however, not enough business to go around, with the result that there is a great deal of competition for what is available and profits are more or less meager.

Parts makers as a general rule are looking forward to the first of the year to produce the volume of business that will make a share of work for all. As a general rule no new business is being sought now nor will it be solicited until quotations permit of some basis of profit.

Some slight retrenchment in operations at car plants, especially those in the medium price field and upward, may be looked for unless business improves after the 15th. Operations in the earlier part of the month are reported to have been based upon expectations of better business than has developed. If the sales rate does not reach up to the production rate the production rate must be brought down to the sales rate.

Business Outlook Good

Practically all parts of the country are sharing in the present business, it is reported. The Pacific Coast has not reached the business looked for, and probably will not be as good buyer as it has been, owing to losses occasioned by the recent prevalence of cattle diseases.

All other sections are prosperous and are taking cars in good volume.

Automobile Sheet Orders Keep Steel Makers Busy

PITTSBURGH, Sept. 15—An improvement that is more marked than any other grade of sheet buying is evident in automobile sheets during the past week. In fact, the trade here comments on the betterment in the automobile demand and also that of the agricultural implement manufacturers, improvement in both of which are considered important signs, while the better demand for sheets for implement manufacture reflects in all probability the better cash position of the farmer.

The automobile buying indicates both a better demand for motor cars and replacement of stocks, for all automobile sheet orders are being taken for immediate shipment as soon as the mills can turn them out. The leading sheet interests still will not sell for any further ahead than the mill's convenience.

Employment Increasing in and Around Milwaukee

MILWAUKEE, Sept. 15.—The first half of September has brought some encouraging developments in the local industrial situation, particularly with respect to the automotive materials and parts division, including equipment manufacturers. So far as passenger car builders are concerned, employment has been increasing as well. The Milwaukee branch assembling plant of Ford has added 50 to 75 men, bringing the working force to full capacity.

Fifty typical Milwaukee shops were

Chicago Zone Finds Business Brisk

employing 1000 more men at the close of last week than in the first week in August. An analysis shows that 25 shops increased forces; eight reported an unchanged number, 14 showed a slight decrease, and three temporarily shut down. The 25 which increased number of employees are those directly or indirectly dependent upon the automotive industries.

Since early in March there was a gradual decline in employment, and latest figures reveal that this decline has now been checked and the movement is again upward. At the middle of September Milwaukee industries were working at 71 per cent of the peak reached in the March-August period of 1923.

Chicago Behind on Retail Deliveries

Industrial Situation Declared to Be Much Brighter Than It Was a Few Weeks Back

CHICAGO, Sept. 18—With one company reporting that it is experiencing the best business it ever has known at this period of the year and seeing possibilities of a new last-quarter record; with another more than 1000 cars behind retail orders; with another making headway with plans to increase production 50 per cent, and with nearly all of them kept busy in efforts to catch up with demand —the industrial picture in this section is decidedly more rosy than it was a few weeks back.

In recent weeks factories have slowly but steadily moved up the output pace in response to immediate market requirements, enlarging forces accordingly, until they are now hitting a stride which likely exceeds earlier expectations in practically all quarters.

Clamoring for Cars

If there has been a weakness in the popular policy of manufacturing cars only in sufficient volume to accommodate actual orders this deficiency has been one of underestimation, for the entire district is behind on retail delivery of new models and many prospective buyers are waiting on their dealers for cars that cannot be delivered for an uncertain period. As this complication might mean the loss of sales in number of instances where the prospects change their minds and buy from competing companies, the producers naturally want to catch up on their order books.

Just how sharply the production curve will turn upward within the next month is difficult to predict but the general opinion is that September, itself, will register larger production in this section than was expected and that there will be a healthy pace in the final quarter.

In instances it is expected that the last quarter of the year will yield highly gratifying, if not record, returns. This should not be accepted, however, to apply to the general situation, although most of the automobile concerns anticipate a "fairly good" to "good" or "fine" fall.

Factories are farther behind on closed models than on open types of cars, while the heaviest proportionate demand seems to be for the lighter lower-priced types of closed models. One company reports that the ratio of demand for one of its units in this group shows it to be a four to one favorite with buyers. Demand for coupés is particularly strong with some companies.

In view of the natural rise of closed models in public favor and the substantial absence of a normal summer season this year, it is commonly believed that the proportion of demand for cars of the inclosed design will continue to creep forward as the fall and winter selling seasons advance. One thing possible is that the last quarter will record the sale of the largest number of closed models in the industry's history as far as this district is concerned. If the total sales volume is normal it is certain such a record will be established.

Industrial Conditions Improve

General industrial conditions are improved, with indications for continued improvement. Corn is still a problem, however. Fortunately frosts of the past few days have not done material damage but it cannot be ignored that much corn at this time is in a precarious stage. At the same time reports from community fairs indicate that farmers are spending money at such events more liberally than last year.

The Week In the Industry

Interpretations of the excise tax law by the Commissioner of Internal Revenue have been announced. Two articles of the ruling will be particularly disturbing to the industry. One interpretation gives an advantage to the truck builder who makes his own parts as opposed to the assembler since it provides that even when the truck builder manufactures a truck selling for $1000 or less he "cannot buy tires, inner tubes, parts and accessories therefor tax free under certificate because he is not a manufacturer of an article enumerated in the exemption provision."

Another interpretation makes it necessary for makers of parts and accessories primarily adapted for use in connection with trucks and other automobiles to pay a tax regardless of the ultimate purpose for which the units are intended. The battery makers will be vitally concerned with this ruling.

Right on top of this has come another ruling which prohibits manufacturers from taking advantage of cheaper freight rates when parts are shippped to branch plants and are there assembled. Under the new interpretation of the Bureau of Internal Revenue a manufacturer must give the purchaser the advantage of the lower rate or else collect the federal excise tax on the basis of the actual rate.

The importance of the tax rulings is so great as to overshadow any other single news event this week.

It looks as though creditors of the Haynes company will be agreed on the desirability of Haynes' affairs being taken over by the Apperson organization.

Auburn has joined the ranks of the straight-eights with a new model equipped by a Lycoming power plant. The phaeton will sell for $1895.

The first publication of balloon tire production figures by the Rubber Association of America shows the big type running about 18 per cent of total output and about 13 per cent of shipments for the last five months.

Racing claimed another victim this week. Jimmy Murphy lost his life at Syracuse while making a desperate attempt to gain first place in the 150-mile A.A.A. championship event.

Normal Business Ahead, Ohio Manufacturers Say

CLEVELAND, Sept. 15—While demand for cars continues on a slight upgrade among local builders, manufacturers believe that conditions are gradually clearing for a normal quantity of business. They report that the industry as a whole will be in a much better position to properly handle the coming volume of business, as a result of the experience gained during the last six months, than they have been before during periods of good sales.

Industry associated with the automotive field, but not directly engaged in making cars, seems to be having a more rapid recovery than do car builders. Fisher Body continues to increase its working force and for more than a month each week has seen a larger payroll for the firm.

The rubber people in Akron, regardless of whether you turn to the small producers or the large plant, state that better times have gone beyond the talk stage and have now become a reality. The output of the plants in Akron is increasing daily, bringing with it employment for many men who have been out of work for as long as six months.

REVENUE BUREAU INTERPRETS TAX LAW

Industry Disagrees with Its Viewpoint and Plans a Confab

Claim Made That Regulations Do Not Conform with Intent of New Statute

NEW YORK, Sept. 17—In the opinion of most of the leaders of the automotive industry the regulations framed by the Commissioner of Internal Revenue interpreting the meaning of the excise tax laws as adopted by the last Congress are radically different from the intent of the measure as they understand it.

As a result of this belief a delegation will visit Washington next Tuesday for a conference with Treasury Department officials in an effort to secure interpretations more in keeping with what the automotive industry believes Congress had in mind when it undertook to give partial relief to makers and users of automobiles and accessories.

In this party will be Alfred Reeves, general manager of the National Automobile Chamber of Commerce, and R. A. Brannigan of the patents department of the same organization, and M. L. Heminway, general manager of the Motor and Accessory Manufacturers Association, and Herman Deuster, traffic manager of the same body. There is a likelihood of other associations being represented.

Concern at First Reading

First copies of the regulations reached New York City today and were eagerly read. In the analysis that followed there was some alarm felt at first because of the wording of the article governing the tax application applying to makers of trucks selling at $1,000 and under and truck bodies selling at $200 and under.

As the clause reads it might be interpreted that in the case of manufacturers buying the parts that entered into the manufacture of their product the 2½ per cent tax would have to be paid, but that with a manufacturer such as Ford, who builds his own parts for his trucks, such trucks would be tax exempt.

Inquiry at the office of the Revenue Department in Washington by an N. A. C. C. representative, however, relieved the minds of the men of the industry, for the department, while admitting that such a construction might be placed on the article, declared that such discrimination would not be made, and that such parts would be tax exempt.

One other article, 16, disturbed the Motor and Accessory Manufacturers Association, because of its possible effect on battery manufacturers. This section holds that parts and accessories primarily adapted for use in connection with "trucks and other automobiles" when sold by the manufacturer are taxable regardless of the ultimate purpose for which they are intended.

In other words, it was thought that the law meant that parts and accessories sold for non-automotive purposes were to be tax exempt. Under the ruling, this apparently is not so and it is feared that inasmuch as about half the battery production has gone to the radio industry the regulations will financially disturb the battery people. This fear is based on the fact that since July 3, when the new law went into effect, battery makers have not collected taxes on batteries sold for non-automotive purposes.

Bureau Issues Regulations

WASHINGTON, Sept. 15—Regulations 47, relating to the excise taxes on sales by manufacturers—revised in accordance with the revenue act of 1924—have been issued by the Bureau of Internal Revenue. The taxes became effective on and after July 3, 1924 (the act having been approved June 2, 1924), even though the articles taxed were manufactured or imported before that date.

Bureau's Regulations Covering Collection of Taxes from Automotive Industry

WASHINGTON, Sept. 15—The full text of the regulations of the Bureau of Internal Revenue covering the collection of taxes from the automotive industry under the new Internal Revenue Act follows:

ART. 11. **Automobiles: Scope of tax.**—An automobile truck, automobile wagon, or other automobile, is a self-propelling vehicle designed to transport along highways and roads persons or property, or both.

Where a chassis is capable of being used in the construction of either an automobile truck, as contemplated in subdivision (1), or an "other automobile," as contemplated in subdivision (2), the primary use for which it is designed will control as to whether it is taxable at 3 per cent under subdvision (1) as an automobile truck or automobile wagon chassis, or at 5 per cent under subdivision (2) as an "other automobile chassis." The same ruling applies with respect to bodies.

The act specfically exempts tractors. A tractor is a machine operated and controlled by its own motive power, and designed to draw or pull, as distinguished from carry, a load. So-called tractors or "semi-tractors," which carry a portion of the load, are taxable as automobile truck chassis.

Trailers are not taxable. A trailer is a vehicle not operated or controlled by its own motive power, but which is pulled or drawn behind another vehicle containing motive power. So-called trailers or "semi-trailers" so designed that a portion of the load or the weight thereof is carried or borne by the ractor or "semitractor," are taxable as "parts or accessories."

TRUCK CHASSIS AND BODIES

(1) Automobile truck chassis and automobile wagon chassis sold or leased for an amount in excess of $1,000, and automobile truck bodies and automobile wagon bodies sold or leased for an amount in excess of $200 (including in both cases tires, inner tubes, parts, and accessories therefor sold on or in connection therewith or with the sale thereof), 3 per centum. A sale or lease of an automobile truck or of an automobile wagon shall, for the purpose of this subdivision, be considered to be a sale of the chassis and of the body.

ART. 12. **Automobile truck chassis and bodies and automobile wagon chassis and bodies.**—The tax is 3 per cent of the price for which automobile truck and automobile wagon chassis and bodies are sold by the manufacturer, if such chassis and bodies are sold for amounts in excess of $1,000 and $200 respectively. It applies to automobile truck and automobile wagon chassis and bodies primarily designed or adapted for the transportation of property along highways and roads, although persons may incidentally be transported at the same time. The sale of an automobile truck or automobile wagon shall be treated, in each case, as the sale of a chassis and a body.

Fire apparatus, including fine engines, hose carts, hook and ladder trucks, water-tower trucks, etc., tank trucks for carrying oil, gasoline, water, etc., moving and furniture vans, and drays, delivery wagons, automobile hearses, etc., are all classified as automobile trucks and automobile wagons. Chassis and bodies designed for use in the production of such vehicles are taxable under subdivision (1), if sold for prices in excess of those specified therein.

A chassis provided with a "superstructure" of such a design that it is without substantial additions adaptable for hauling heavy loads, or which is designed for use in the construction of a commercial car, is an "automobile truck chassis" or "automobile wagon chassis," and taxable at 3 per cent when sold by the manufacturer thereof for an amount in excess of $1,000. The term "superstructure" means any chassis frame of steel or wood or other material which is adaptable, by the addition of a few bolsters or planks, for carrying a heavy load. In the case of an automobile truck or automobile wagon chassis sold by the manufacturer for an amount in excess of $1,000, the manufacturer must return the tax of 3 per cent to the Government in all instances.

Where the purchaser of a tax-paid automobile truck chassis or automobile wagon chassis attaches thereto a commercial body manufactured by him, and sells the completed automobile truck, or automobile

(*Continued on page* 537)

ASSEMBLERS HIT BY NEW TAX RULING

Buyers Will Share Low Freight Rates

Taxes Will Be Based on F.O.B. Factory Price Minus Actual Shipping Cost

WASHINGTON, Sept. 16—A ruling affecting automobile manufacturers, and especially those manufacturers having assembly and branch plants, has been made by the Internal Revenue Bureau which, in substance, prohibits manufacturers from taking advantage of the cheaper freight rates when disassembled cars are shipped to branch plants and there assembled.

Under the ruling of the Bureau a manufacturer must give the purchaser the advantage of the lower rate, or else collect the Federal excise tax on the basis of the actual rate. For example:

Under former practice a Detroit manufacturer, having a branch in a distant city would ship the parts for eight or 10 cars in one freight car and thus secure a slightly smaller freight rate. He would charge the dealer the f.o.b. price plus what the freight rate would have been on a car if it had been shipped from the factory assembled.

In actual practice in many cases the freight rate on the assembled car from Detroit to, say, Dallas, Tex., might be $70. The same car shipped in the form of parts, whereby more cars could be moved in the same railway car, could be moved to Dallas for $50. This would make a difference of $20 in the rate, where the car was assembled in the Dallas plant.

Based on "Actual" Rate

In selling the car to the dealer, the Dallas plant, however, under former practice, would sell it at the f.o.b. factory price plus the $70 freight rate on the assembled car, rather than at the $50 rate had the car been shipped to the Dallas plant in the form of parts and there assembled. Under the new ruling of the Bureau the excise tax must be paid on the basis of the f.o.b. factory price minus the ACTUAL freight rate paid.

To put it another way, the Government announces that the manufacturer must pay to the Federal Government the excise tax based on the actual selling price, minus the actual freight rate, and that the manufacturer cannot take advantage of any differential freight rates saved to the dealer.

The basic law is worded as follows:

"When the amount billed the purchaser in a separate item as freight is in excess of the actual transportation charge but the actual charge is also disclosed in the bill and known to the purchaser, only the amount billed as freight in excess of the actual charge is taxable as part of the sales price."

The ruling of the Bureau industry declares:

It is the general practice of automobile companies to sell their machines at f.o.b. factory price, chrging the freight to destination as a separate and specific item. When freight is thus charged, it is not regarded by the bureau as a part of the price in computing taxes. It is held in article 4 of Regulations 47 that freight and delivery charges are taxable as part of the sales price when the amount charged the purchaser does not represent the actual transportation charges.

It is the practice of the Motor Co. to sell its cars on the basis of f.o.b. Flint, Mich., price plus freight from that point to destination. Not all cars of this company are assembled and sent from Flint. They may be sent to the customer from a point nearer destination. For example, a machine sold in Washington might be delivered from Baltimore instead of from Flint, in which event the transportation charges actually paid would be less than an item of freight from Flint to Washington.

Notwithstanding this fact, a machine delivered in Washington from Baltimore would be sold f.o.b. Flint plus freight from Flint to Washington. If no other facts were involved in the case, then in accordance with the provisions of the regulations tax would be assessed against the entire amount paid—that is, the so-called f.o.b. Flint price plus the item represented as freight from Flint to Washington. The invoices, however, as presented to the Bureau when the ruling was made in the case showed an item representing the f.o.b. Flint price and another item representing the freight from Flint to destination.

There was also an item shown representing the actual freight paid, so that the customer was not in any sense deceived by the invoice but knew exactly how much freight was paid on the machine. It was accordingly held by the Bureau that the so-called Flint price plus the so-called freight from Flint to destination should constitute the basis of computing the tax but that the actual freight paid, say, from Baltimore to Washington, could be deducted from the sum of the two items, and tax paid on the balance.

Text of Regulations Covering New Tax Law

(*Continued from page* 536)

wagon, he is liable for a tax of 3 per cent of the selling price of the body (if sold for an amount in excess of $200). The selling price of the body must be accurately determined, and specifically recorded and billed separately. Otherwise, the manufacturer will be required to pay tax on the full price received for both chassis and body. However, credit may be taken for the tax reimbursed to the manufacturer of the chassis, as provided in Article 6. The same rule applies where the manufacturer of a taxable automobile truck chassis or automobile wagon chassis installs thereon a tax-paid body and sells the completed car.

For the purpose of determining the selling price, in order to arrive at the taxable status under subdivision (1), the terms "automobile truck chassis," "automobile wagon chassis," "automobile truck body," and "automobile wagon body" shall be construed to mean the complete chassis or body, including only such tires, inner tubes, parts and accessories, trimming, etc., as are customarily made a part of, or sold attached to or in connection with, such articles.

Subdivision (1) taxes automobile truck chassis and automobile wagon chassis sold by the manufacturer for more than $1,000, and automobile truck bodies and automobile wagon bodies sold by the manufacturer for more than $200 (including in both cases tires, inner tubes, parts, and accessories therefor sold on or in connection therewith or with the sale thereof) at the rate of 3 per cent. A cab is not a part or accessory for a chassis but is a part or accessory for a body. Therefore, if a cab is sold in connection with a chassis, the selling price of the cab must be recorded and billed separately, and tax paid thereon at the rate of 2½ per cent, regardless of whether the selling price of the chassis is more or less than $1,000. Where a cab is sold on, or in connection with the sale of, a commercial body, the taxability of the cab will depend on whether or not the aggregate selling price of the body and cab and other parts or accessories for the body sold on or in connection therewith, or with the sale thereof, is in excess of $200. Where the aggregate selling price is $200 or less no tax will attach, but where it is in excess of $200 the tax of 3 per cent applies to the total amount.

The manufacturer, producer, or importer can not escape liability on the sale of a chassis or body if the selling price is made less than the taxable price specified in the act, by omitting, excluding from the sale, or billing separately tires, inner tubes, parts, or accessories customarily made a part of or sold on or in connection with such chassis or bodies. Inasmuch as subdivision (1) states that the sale or lease of an automobile truck or of an automobile wagon shall, for the purpose of this subdivision, be considered to be a sale of the chassis and of the body, and subdivision (3) prohibits the tax on such chassis or body as parts, it becomes necessary to divide an automobile into two principal units. In any case where the omission of any of the above-mentioned articles occurs the manufacturer will be held liable for the tax as though such articles were or had been in fact included in the sale. Failure to so report and pay the tax will render the manufacturer liable to such penalties and interest as may

(*Continued on pages* 544 *and* 545)

54,149 G.M.C. Units Retailed Last Month

So Far This Year Sales Reach 494,014 and Deliveries to Dealers 442,112

NEW YORK, Sept. 15—In comparison with July, August was a slower month with General Motors divisions, but as a result of dealer operations stocks of the retailers continue less than retail sales. This is shown by the monthly report issued by the corporation which shows that in August deliveries by dealers to ultimate consumers totaled 54,149 cars and trucks, compared with 55,832 in the same month a year ago; and further with 60,275 in July this year.

On the other hand, sales by the different divisions to their dealers totaled 48,450 as against 40,563 in July, thus demonstrating that production and retail sales are getting closer together than in the preceding months.

In the eight months of operations retail deliveries have totaled 494,014 as against 442,112 sales to dealers. Comparing the same periods this year and last shows that there has been a decrease of 6.6 per cent in the eight months of this year as against the same time last year.

The report for the first eight months of 1924 and for corresponding periods in 1923 and 1922 follows:

	1924 Sales to Dealers	Retail Sales
January	61,398	33,295
February	78,668	50,006
March	75,484	55,845
April	58,600	89,610
May	45,965	84,686
June	32,934	66,146
July	40,563	60,275
August	48,460	54,149
Total	442,112	494,014
	1923	
January	48,162	30,464
February	55,427	41,448
March	71,669	74,137
April	75,822	97,667
May	75,393	89,317
June	69,708	75,962
July	51,634	63,209
August	65,999	55,832
Total	514,814	528,026
	1922	
January	16,038	11,520
February	20,869	14,795
March	34,082	26,615
April	40,474	48,353
May	46,736	51,983
June	48,541	47,058
July	33,372	32,000
August	42,840	43,452
Total	283,402	278,776

STUDEBAKER-WULFF SALES

MARION, OHIO, Sept. 15—Producing 1200 casing and 2250 inner tubes a day in its two plants, the Studebaker-Wulff Rubber Co. reports that its sales are steadily running 100 per cent greater than in 1923, with no indication of slackening. It also states that its profits are more satisfactory than at any time since 1920.

900 FORD TRACTORS SHIPPED TO RUSSIA

DETROIT, Sept. 17—The Soviet Government has been shipped 900 tractors by Ford Motor Co., the largest shipment ever sent into the country, the company reports. Two shiploads, one of 500 and one 400, are to arrive at Novorossik this month. All the tractors will be used for agricultural purposes. Previous to the present shipment a number of smaller lots have been purchased.

Maxwell Adopts Policy Against Overstocking

DETROIT, Sept. 15.—Another big producer has joined General Motors in adopting a policy not to overstock the retailers, the Maxwell Motor Corp., through Walter P. Chrysler, president and chairman of the board, announcing that hereafter every effort will be made to balance production and sales.

Mr. Chrysler said:

Although public demand for the new Chrysler cars is ahead of present output, our policy is to limit the current month's production to the previous month's actual sales to the public. This means the Chrysler and Maxwell organization will avoid the embarrassment of overproduction and overstocking dealers. We are now on a well balanced basis and as sales increase we are in a position to expand plant operations.

Under this plan of operations Crysler and Maxwell inventories are kept in liquid shape and forward commitments are restricted to actual requirements.

At the same time, Mr. Chrysler announces that his dealer organization has grown from 1696 a year ago to approximately 2900 now.

Winther Need Not Pay Income Tax Penalties

MILWAUKEE, Sept. 15—The United States District Court at Milwaukee has held that the Government cannot collect penalties on income taxes levied against bankrupt estates, in upholding the ruling of Milton J. Knoblock, referee in bankruptcy at Racine, Wis., in the case of the defunct Winther Motors, Inc., of Kenosha, Wis.

The court holds that the trustee must pay the original tax assessment, plus interest, which amounts to $18,833, but sets aside the penalties. It is held that after an individual or concern goes into bankruptcy, there can be no willful intent to defraud or be delinquent, consequently penalties cannot be imposed.

Bock Grants License to German Producer

Arrangements Are Also Being Made for Manufacturing Bearings in France

TOLEDO, Sept. 15—Arrangements for the manufacture and distribution of Bock tapered roller bearings in Germany and France have been made by Robert E. Clingan, vice-president and general manager of the Bock Bearing Co. of this city. He spent nine weeks abroad.

The Bock patents will be licensed to Fried Krupp & Co. of Berlin and Essen, which will make bearings for a line of machinery as well as for railway axle equipment and other heavy types of vehicles. Negotiations are expected soon to be completed with the R. B. F. Co., for many years a manufacturer of ball bearings in France, for similar exploitation in that country.

Mr. Clingan also visited the plant of the British Bock Bearings, Ltd., which was formed three years ago. Offices are in London but the plant is located in Glasgow, Scotland. Business has been very good with this plant, he reported.

In Vienna steel manufacturers approached Mr. Clingan with a view to doing business with this country, but the great distance from the source of supply to the plant made the proposal out of the question for the Toledo manufacturer.

Conditions in Germany

"Germany is in a condition to make the quickest comeback in business the world has ever known as soon as disputed reparations problems are settled," Mr. Clingan declared. "It wouldn't be surprising to see Germany and England working together in quite close commercial relations, leaving France out on the limb, so to speak, if conditions continue as at present.

"France may be right, but she has recently taken an attitude that has discouraged and been antagonistic to English business. Business in Austria is in a deplorable state, but there is only one way out and that is to get outside trade. England is not going any too well industrially, but improvement is expected this fall."

Operations at the local plant are showing betterment, but only gradual improvement is expected this fall. September will show considerably better business than did August.

FORD LIMITS BILLBOARD ADS

DETROIT, Sept. 17—Ford Motor Co. has issued orders to eliminate Ford poster advertising from all boards located on State highways not within the corporate limits of cities or other municipalities. Substitute locations will be provided for all signs which detract from sightliness of the surroundings.

Ajax Mans Toolroom of Mitchell Factory

No Announcement Made, However, When Actual Production of Cars Will Start

RACINE, WIS., Sept. 15—With the manning of the toolroom today, the Ajax Motors Co. of Racine, Wis., started initial operations in the former plant of the Mitchell Motors Co. at Racine. Activities will be extended in a progressive manner, but it is not yet certain when the plant will commence actual production of cars.

In a talk before the Racine Rotary Club, David M. Averill, vice-president and general manager of Ajax, and a former president of the Rotary Club at Flint, Mich., said that beyond the effort of obtaining the most highly skilled toolmakers available, he could not reveal any plans.

He did say, however, that Ajax will build a popular-priced passenger car which it expects to put out in volume. "We have before us the work of laying out and determining the method of our operation, and what we must have and use in the form of equipment," said Mr. Averill. "We must make necessary purchases of machinery and then the plan itself can be laid out. Our present step is to design tools and decide what sort of equipment must be put into the factory."

A special meeting of stockholders in the Lafayette Motors Corp., Milwaukee, was held in Baltimore on Sept. 3 to consider the offer of the Ajax company to purchase the tools, equipment and machinery for $225,000 in cash. The Lafayette plant in Milwaukee closed down some time ago, the manufacture of the Lafayette having been discontinued because the operation was not profitable, owing to the comparatively limited market for this class of passenger car at the price manufacturing cost dictated.

Will Use Lafayette Machinery

CHICAGO, Sept. 15—While no official announcement has been made by C. W. Nash as to the sale of the Ajax Motors Co. of Racine, a Nash subsidiary, of the Lafayette machinery and equipment, it is understood that the Ajax company will use considerable of the machinery in the manufacture of its proposed new line of cars. At the same time the Ajax company will service Lafayette cars from its plant in Racine, formerly the Mitchell plant.

As for the Lafayette plant in Milwaukee, it is expected that it will eventually be utilized by the Nash company itself in the production of Nash cars, as the Nash company owns the plant and had leased it to the Lafayette Motors Corp.

Little information is to be had from Nash executives as to the Ajax line. It is known, however, that the product will be a light, popular priced car to be called the Ajax, and that the engineers and Nash executives have substantially approved the design. Mr. Nash himself is taking a deep personal interest in the proposed Ajax and it is said that the newcomer will embody a number of his own ideas and be constructed in keeping with Nash conceptions of thoroughness and efficiency.

It is expected that the Ajax will appear at both the New York and Chicago shows and that the actual merchandising of the unit will likely be under way by early spring.

Specialization in Manufacturing and Merchandising Will Feature Movement Toward Stability

AN INTERVIEW WITH W. R. ANGELL,
Vice-President of Continental Motors Corp.

By D. M. McDonald,
Detroit News Representative of the Class Journal Company.

Detroit, Sept. 17.

THE progress of the industry toward stability will be marked by a greater tendency toward specialization in manufacturing and in merchandising, declares W. R. Angell, vice-president of Continental Motors Corp. The merchandising problems in the sale of automobiles are such as to demand not only the attention of a department but of a whole organization, with the problem of manufacturing reduced to its simplest practical form.

The car manufacturer who will be most successful will be the one who gives all of his attention to the study of the market and its requirements and who shapes all his plans to meeting these requirements in a merchandising sense. Under present day conditions automobiles are being sold almost entirely upon their externals—design of line, bodies, upholstering and paint work—and Mr. Angell regards this condition as likely to hold true for many years.

These are the features which the car manufacturer will concentrate upon in a manufacturing sense, he believes, and as a matter of sound judgment, he predicts that these features will be concentrated upon almost to the exclusion of all others. The performance of the modern car can be accepted and is today usually accepted by the public unquestioned, the whole buying thought being given to riding comfort and appearance.

Speaking of outlook for fall business, Mr. Angell says that indications at the present moment are that there would be a good buying movement, basing this on production schedules during the month of August and for September. August schedules this year were one and a half times greater than in August last year, and schedules for the next two months also show important increases over the same months last year.

General conditions about the country supported the expectation for good fall buying of cars and trucks, Mr. Angell says. Crop conditions are generally good and there are few commodity stocks, making it certain that in the event of buying in any quantity by the farmer the industrial sections will quickly return to normal operations. As the farmer has a ready market for his products at prices considerably higher than for several years, he is almost certain to be a large buyer from this time on.

Reports from car manufacturing customers indicate few if any cars in dealers' hands, Mr. Angell declares. Orders from dealers are coming in for a steady volume of cars and these are being delivered steadily to customers. This buying is making conditions steady throughout the industry as in the absence of stocks by dealers or by car makers, the parts and material manufacturers are being steadily drawn upon.

Distributor Appointed for Flint in Ireland

DETROIT, Sept. 12—Arrangements have been completed for the distribution of Flint motor cars in Ireland by the Clanwilliam Motors, Ltd., of Dublin, according to a statement by William E. Holler, vice-president and general manager of the Flint Motor Co. The Clanwilliam company is the successor of Harry Ferguson, Ltd., one of the old established companies in that country.

Motor Wheel Deliveries Approached August, 1923

DETROIT, Sept. 17.—Motor Wheel Corp. sales and deliveries in August were 90 per cent of the total in August, 1923, according to a statement by the company. As the business of the company was at its peak in August last year, the banner month of the company's history, the showing made this August is regarded as satisfactory by directors.

As compared with business two years ago, August this year showed a 25 per cent increase. Releases for September, it announces, are larger than releases for August, and the outlook is declared favorable for a good fall business with all customers.

The switch from old type wheels to wheels designed for balloon tires threw a tremendous volume of business to the corporation following the national shows, which continued up to recent weeks, when a decline was experienced. A large part of this volume was for replacement wheels.

Big Plant Obtained for American Body

Company Leases Curtiss Building B, Giving It 500,000 Sq. Ft. Floor Space

BUFFALO, Sept. 17—The American Body Co. has leased from the Terminal Warehouse Corp., a subsidiary of the American Radiator Co., Building B of the old Curtiss factory in Elmwood Avenue, giving it a floor space of more than 500,000 sq. ft. or the equivalent of 12 city blocks. It will lease its present Niagara Street plant.

Removal to the building is now going forward and complete operation will be in effect within 60 days. Three hundred more employees will be engaged in the new quarters. The dry kilns, formerly located in Tonawanda, will be installed in the old Curtiss building.

Building A of the property is occupied by the American Radiator Co., which purchased it from the Government 10 years ago.

The company manufactures bodies for the Lincoln, Marmon and Franklin cars and bus bodies for Pierce-Arrow and International Motors.

Most Creditors Favor Apperson-Haynes Plan

INDIANAPOLIS, Sept. 15—Although there has been no further court action in the Federal Court or before the Federal referee in bankruptcy to whom the petition in bankruptcy against the Haynes Automobile Co. was referred Sept. 2, when the referee gave the petitioning creditors and others time to work out a reorganization, there was filed in the Federal Court here yesterday an intervening petition by three creditors who stated that their proved claims against the Haynes company amount to more than $6,000.

The petitioners in the intervening petition are the Chicago Curled Hair Co., Duplex Envelope Co. and Taylor Trunk Works. They ask to be permitted to join the claimants who originally filed suits.

It is understood in Kokomo that the principal creditors and the creditors' committee asked the Apperson interests to take over the Haynes affairs, and that plans are proceeding harmoniously along this line, with the majority of creditors already agreed to that step.

Monogram Radiator Cap Patents Are Protected

CHICAGO, Sept. 16—Judge Wilkerson in the United States District Court here yesterday issued a permanent injunction restraining the Advance Products Corp., the Norlipp Co., A. C. Lippert, Louis Hoffberg and Clayton A. Norton from infringement of the patents covering the Monogram radiator cap, which are owned by Miller & Pardee, Inc., the parent corporation controlling the General Automotive Corp., manufacturer of the Monogram cap.

The court declared that the patent held by the complainants, issued April 18, 1922, to Harvey S. Pardee, John A. Dewire and James W. Suporter and assigned by them to Miller & Pardee, Inc., "is good and valid in land and ever since April 18, 1922, the plaintiff has been the sole and exclusive owner thereof and of the invention described and claimed therein, and all rights and privileges thereunder and thereunto."

The decision of the court follows prolonged litigation of an action instituted by Miller & Pardee, Inc., against the defendants above named in which priority of invention of the Monogram radiator cap was claimed and in which it was contended that the complainants' patent rights had been infringed.

The defendants have filed a petition for modification of the decree, which will be heard this week.

Electric Association Holds Its Convention

WHITE SULPHUR SPRINGS, Sept. 17—Manufacturers of starting, lighting and ignition equipment began a four-day sesion here today. It is the fall meeting of the Automotive Electric Association at which the service managers of the manufacturers are represented as well as the makers of miniature incandescent lamps.

The board of governors of the Automotive Electric Service Association is also present, as are representatives of the Associated Advertising Clubs of the World. Sessions are to be held daily and in the evening, a very comprehensive program having been arranged.

The standardization committee will render its report, as will the service, patent and legal and advertising committees.

New 8-in-Line Auburn Placed in Production

AUBURN, IND., Sept. 15—A new eight-in-line is in production by the Auburn Automobile Co., public announcement of which will be made on Sept. 21. The engine is the Lycoming with bore of 3⅛ in. and stroke of 4¼ in., giving a rated horsepower of 31.25.

Three body models are available, a touring at $1,895, a brougham at $2,395 and a sedan listing at $2,550. Balloon tires and four-wheel brakes are part of the standard equipment on all models and the standard accessories are numerous. The wheel base is 124 in.

SPLITDORF WINS ACTION

NEWARK, N. J., Sept. 16—Application for a receiver for the Splitdorf Electrical Co., made recently by a stockholder, has been denied by Vice-Chancellor Backes. At the court hearing today the lawyers for the defendant company stated that three banks were willing to make further unsecured advances.

U. S. Steel Gives Up "Pittsburgh Plus"

Action Follows Order Issued by Federal Trade Commission to Stop System

WASHINGTON, Sept. 17—The Federal Trade Commission has been notified that the United States Steel Corp. and its subsidiaries have abandoned the Pittsburgh plus system and will not quote or sell their rolled steel products upon any other basing point than that where the products are manufactured or from which they were shipped.

The action has been taken following the order of the commission issued July 22, which ordered that this system be discontinued. It was held then that it was an unfair method of competition, in violation of the Federal Trade Commission act, and price discrimination in violation of the Clayton act.

In its response the Steel Corporation informed the commission it did not admit the validity of the order or the jurisdiction of the commission.

Bosch and Gray Merger Negotiations Advancing

SPRINGFIELD, MASS., Sept. 17—Negotiations are progressing favorably for the merging of Bosch and Gray & Davis, Arthur T. Murray, president of the American Bosch Magneto Co., said today.

Discussion of the project was taken up at a meeting of both boards of directors in Boston yesterday and will be continued at another meeting Thursday. Indications are that the directors will reach an agreement, Mr. Murray said, and that it will be ratified at stockholders' meetings within the next 30 days.

In that event, he said, the physical consolidation of the establishments will be undertaken promptly. He said the merger would largely increase the volume of operations at the Springfield plant, where approximately 1600 men are now employed.

Indian Makes New Model; Force Put on Full Time

SPRINGFIELD, MASS., Sept. 17—The Indian Motorcycle Co., which is starting production on a new model, the "Indian Prince," along with two other standard models, has placed its plant force on full time. Reports from field representatives are said to be good for fall sales.

MAKE NEW MODEL PROTEST

ST. LOUIS, Sept. 17.—The St. Louis Automobile Dealers Association has passed a resolution protesting against the introduction by manufacturers of new models during the summer selling season.

Men of the Industry and What They Are Doing

Robins Appointed by Oakland

Harry M. Robins, formerly export manager of Dodge Brothers, has been appointed director of districts of the Oakland Motor Car Co., in which position he will be associated with C. W. Matheson, former Dodge Brothers vice-president in charge of sales, who is now vice-president and general sales manager of Oakland. With the Oakland company, Mr. Robins will have an important part in carrying out plans for development of the dealer organization in the United States, and in addition will have supervision of Oakland overseas development. Mr. Robins, prior to his resignation in the early part of this year, had been a member of the Dodge Brothers sales organization for 10 years, his principal work being the organization and development of the overseas business.

Albert Champion Sails for Europe

Albert Champion, president of the AC Spark Plug Co. of Flint, Mich., has sailed for Europe, to be gone two months. Mr. Champion will visit his foreign connections and study automotive conditions abroad.

Hosac in Charge of Rolls-Royce Sales

W. E. Hosac, formerly assistant to the president of Rolls-Royce of America, Inc., has been elected vice-president in charge of sales and advertising and has moved his office from Springfield, Mass., to the Collonade Building, Fifty-eighth Street and Seventh Avenue, New York City, which now houses the executive sales offices of the company.

M. B. Covert Resigns

M. B. Covert, for 12 years chief engineer of the Cole Motor Car Co. of Indianapolis, has resigned. During the past year Mr. Covert also acted as director of purchasers.

Marmon Appoints Jolls

Le Roy Jolls has been appointed mechanical superintendent of the Nordyke & Marmon Co. Since he entered the industry in 1902 with Oldsmobile Mr. Jolls has been connected with Studebaker, Northway and Duesenberg. From 1915 to 1917 he was mechanical superintendent of the Packard Motor Car Co. and before accepting the Marmon appointment he traveled as works representative for the Potter & Johnson Machine Co. of Pawtucket, R. I.

Pflum Takes Charge in Cleveland

Joseph F. Pflum, who has been manager of the Cincinnati branch of the Heald Machine Co. for a number of years, has been placed in charge of the company's Cleveland territory, with headquarters in the Cleveland Discount Building. R. A. St. John will also be located in Cleveland and will assist Mr. Pflum in sales and service work.

Davenport Visiting South America

Howard Davenport, of Continental Motors Corp., is leaving on a six months' business trip to South America. During most of the time he will make his headquarters in Buenos Aires.

Lynch Joins Distributor

J. F. Lynch, for five years sales manager of the Kissel Motor Car Co., Hartford, Wis., has resigned to become associated with Oscar M. Nelson, present Kissel distributor at Minneapolis, in the Nelson-Lynch, Inc., as the firm will now be known. Mr. Lynch thus returns to his old stamping ground, as it was in 1910 that he became branch manager of the Kissel in St. Paul.

Falls Officials Distribute Cars

Three former officials of the Falls Motors Corp., Sheboygan Falls, Wis., have organized the Eastern Wisconsin Motor Co. of that city to distribute Paige and Jewett cars. Fred A. Karste, who recently retired as factory manager of the Falls company, is president; Harvey J. Ervin, until now superintendent of the Falls test department, is vice-president, and Theodore C. Widder, former assistant treasurer and general auditor of the Falls company, is secretary and treasurer.

Painter with Manufacturers' Agent

John G. Painter, well known as a sales executive in the industry, has joined the sales organization of Charles G. Monson, manufacturres' agents, in Detroit. Mr. Painter was formerly sales manager of Continental Motors Corp. and of Disteel Wheel Co. before the consolidation of the latter with Motor Wheel Corp. He was also technical and service manager of Hupp Motor Car Corp. before entering the sales field.

Willard Named Sales Manager

R. D. Willard, a pioneer in the industry, who started with Autocar in 1900 and who has been active in the sale of cars ever since, has been appointed general sales manager of the Allen Auto Supply Co. of New York City, making shutters and tire covers.

Added to Remy Sales Staff

G. H. Bernard and C. S. Poland have been added to the sales staff of the Remy Electric Co., the former handling motor bus electric equipment and the latter taking the place at the factory formerly occupied by R. H. Smith, transferred to the Detroit office.

New Products Shown by Tool Producers

Form Center of Much Interest at Exhibit Staged in New Haven, Conn.

NEW HAVEN, CONN., Sept. 15—About 110 exhibitors had showings of machine tools, parts therefor, and small tools at the New Haven Machine Tool Exhibition which opened at the Mason Laboratory here today. Most of the prominent machine tool manufacturers of New England were represented, although some concerns who had considerable space at similar exhibits in past years were absent. On the other hand, there were a number of exhibitors from Ohio, Michigan, Illinois and Wisconsin, some of whom have not been prominently represented heretofore.

Attendance appears to be excellent as heretofore and included executives and production men from a number of automotive plants. Considerable interest was manifest in observing the performance of many tools which were in use on regular production work.

Some of the New Tools

Among the exhibits of production tools, which are comparatively or entirely new to the trade and which were the center of considerable interest, may be mentioned the Hanson-Whitney semi-automatic thread milling machine, the Sundstrand Stub Lathe, made by the Rockford Tool Co.; the Goss and de Leeuw Machine Co.'s multiple-spindle chucking machine, the Baker Brothers cam fed automatic drill and the line of surface grinding machines shown by the Abrasive Machine Tool Co.

There is increasing interest in means for making more accurate threads and in gaging methods which insure accurate production of threaded parts. Jones & Lamson Machine Co. showed for the first time publicly the latest form of screw thread comparitor—a bench type of instrument which magnifies to 50 diameters and is a self-contained unit containing a ground glass screen on which the projection is made. This Comparitor employs an incandescent lamp bulb, can be used in the ordinary shop light and requires a bench space of not less than four square feet.

Dr. Burd on University Staff

Dr. Henry A. Burd, formerly general manager of the Wisconsin Tractor Co., Madison, Wis., has accepted appointment as associate professor of business administration at the University of Washington, in Seattle. For some time he has been associated with Rosen Heating Co.

18 Per Cent. of Tires Are of Balloon Type

Figures of Rubber Association, However, Do Not Include Firestone Output

NEW YORK, Sept. 15—Statistics compiled by the Rubber Association of America, based on returns from 80 per cent of the industry, show that the balloon tire is averaging 18 per cent of the cord tire production, while shipments are running approximately 13 per cent. In this reckoning Firestone does not figure.

Five months' balloon returns are given by the association in its report on July business, which show a production of 2,052,988 in that time, with shipments of 1,369,332 and inventories of 2,429,956. March marks the beginning of the balloon, according to the association, starting with 216,808, with the peak in May with 564,030.

Since that time there has been a drop, with July registering 365,213. June was an exceedingly good month in that it averaged 25 per cent of the cord production, with a drop back to normal in July. At that time the industry had 1.8 months' supply on hand.

Five Months' Statistics

As reported by the association, production, shipments and inventory for the first five months of balloon manufacture are as follows:

	Production	Shipments	Inventory
March ...	216,808	141,272	116,433
April ...	406,807	235,217	293,406
May	564,030	282,596	569,624
June	500,130	317,215	734,649
July	365,213	393,132	715,844
Total...	2,052,988	1,369,432	2,429,956

In the high pressure cord field, July was a healthy month, with production increased over June, 1,632,380 to 1,530,872, and with shipments showing a marked increase, 2,148,581 to 1,683,898. On the other hand, there was a reduction of inventory, the report showing 3,028,785 in stock at the end of July as against 3.567,635 in June.

Compared with July of last year there was an appreciable improvement, particularly with shipments, for in July, 1923, shipments totaled 1,315,664 as against 2,148,581. Production in July, 1923, was 1,173,142 compared with 1,632,380. A year ago in July inventory totaled 4,108,853; this July it was 3,028,785.

For the first seven months of this year production of high pressure cords ran to 12,736,764, a shade under the same period last year, which reported 12,791,008. Shipments in the first seven months of 1924 amounted to 12,724,834, compared with 10,995,573, a most satisfactory increase.

Fabric casing production in July was a decrease of 7.3 per cent under June and a decrease of 32.3 per cent compared with July, 1923. Shipments increased 35.5 per cent over this June, but decreased 20.4 per cent in comparison with July, 1923. Total production for the seven months was 6,664,041 and shipments 6,699,496.

In solids and cushions ten companies reported a decrease of 16.4 per cent in production compared with June, but an increase of .3 per cent over July, 1923. Production in July was 30,570 solids and 11,928 cushions, with 41,468 solids and 9981 cushions shipped. Production for seven months was 341,682 solids and 68,050 cushions, with shipments of 327,853 solids and 62,807 cushions.

High pressure inner tubes totaled 3,545,956 in July against 3,057,152 in June, with shipments reaching 5,084,015 against 3,705,059 in June. Balloon inner tubes totaled 311,333 in July, with shipments of 308,238. This compares with 436,279 production and 259,238 shipments in June.

Borg & Beck Activities Reach to Other Fields

CHICAGO, Sept. 17—Signalling an expansion of considerable importance which will take the activities of the organization into fields outside the automotive industry, announcement is made that the Borg & Beck Co. has taken over the A. O. Norton, Inc., with a plant at Boston and A. O. Norton, Ltd., with a plant at Coaticook, Canada.

The Norton factories manufacture ball-bearing and other types of jacks for use in railroad and bridge work and various forms of heavy construction. It is reported that approximately $1,000,000 was involved in the purchases.

Both plants already have been taken over by Borg & Beck, while all directors of the Chicago company have been elected to the Norton board, Harry Norton being retained as a director and president in the two companies absorbed. It is said that the expansion will in no way interfere with Borg & Beck's automotive production.

Petition in Bankruptcy Filed by Parker Truck

MILWAUKEE, Sept. 15.—The Parker Motor Truck Co., which about eight years ago took over the plant of the former Stegeman Motor Truck Co., a pioneer in the Northwestern truck industry, has filed a voluntary petition in bankruptcy. Schedules admit liabilities of $364,756 and claim assets of $244,705. Frank H. Parker, president and one of the chief stockholders, died within the past year.

In recent months production has been limited by the lack of a satisfactory market and the inadequacy of working capital. Unsecured claims amount to $290,414. Assets include stock on hand, $100,000; bills and notes receivable, $89,271; machinery, $30,000; open accounts, $20,435, and patents, drawings, blue prints, etc., $5,000.

Tire Trade to Talk Franchise Question

Promiscuous Granting of Territories to Be Taken Up at Dealers' Convention

NEW YORK, Sept. 15—In the opinion of George J. Burger, president of the National Tire Dealers Association, the question of dealer qualification is one of the most important subjects which will come up for discussion at the association's fifth annual convention in Akron Nov. 18-20.

Responsible dealers feel, he says, that upon this question hinges the reason for the many malpractices indulged in by some tire retailers. Back of it, he says, is the overcrowded condition of the retail field, with its resultant price cutting and other distasteful practices.

Outlining his views, Mr. Burger says:

The big question in the minds of the tire manufacturers right now is how can he distribute his product at the lowest possible cost through channels which will assure him a constant, honest and reliable contact with the ultimate consumer. He also is concerned as to how he can establish a relationship with his dealer which will be lasting and which will tend to increase his good will.

The dealer, realizing the low profit per unit and the high cost of doing business compared with pre-war days, must secure a line of tires that will insure him a fair return on his investment in his business. The dealer has proved this by not being so ready these days to accept the agency for tires with which he is not familiar and which have a strong local sales resistance.

Wishes to Sell Sound Lines

He is inclined to sell those tires which are stable, more or less in demand or which he knows are made by responsible manufacturers who will stand behind him in the enforcement of their sales policies. This explains why "price" and "gyp" tires are not meeting with the reception in the trade that they did several years ago.

This change is certainly for the betterment of general conditions in the industry. It would be unfortunate if the dealers were forced to become interested again in questionable merchandise because of the promiscuous granting of dealer franchises.

The manufacturers should consider an immediate change in their policies providing for a finer distinction between a real tire merchant, one who makes the sale of tires his main business, and the individual or concern which handles tires as an insignificant side line to another business.

Despite the protests of many years' standing about the retail tire field being overcrowded, there has been no evidence of an effort being made to reduce the number of outlets to consumers.

CORRECTION

The Universal Auto Cover Co. is the new name of the Auto Spring Protector Co. of Boston. In AUTOMOTIVE INDUSTRIES, issue of Aug. 14, there was a transposition of names which gave the change as from the Auto Spring Protector Co. to Universal Auto Cover Co.

Murphy Meets Death on Dirt Race Track

Tries to Pass Car at Syracuse—Regarded as Greatest of American Drivers

SYRACUSE, N. Y., Sept. 15—On what is regarded as the safest dirt track in the country Jimmy Murphy, greatest of all American drivers, met death this afternoon in the 150-mile A. A. A. championship event, the feature of the card at the State Fair Grounds.

With 138 miles finished, Murphy was traveling at 80 m.p.h. in an effort to pass Phil Shafer. When he attempted to swing out of the first turn into the backstretch his Miller Special failed to straighten up, clipped the inside rail, skidded and hit the fence a second time, while on the next skid it crashed into the railing, carrying away a section of the fence.

Similar to Burman Accident

The car itself did not overturn and it is thought that Murphy's injuries were caused by huge wooden splinters striking him in the chest. In a way the accident was similar to the one that killed Bob Burman in the Corona, Cal., road race several years ago. Burman, as noted a driver in his time as was Murphy now, hit a telegraph pole and the pole crashed on his head, killing him.

Despite the accident the other drivers were permitted to finish the race, the winner being Shafer in 1 hr. 54 min. 25.20 sec., with Bennett Hill second and Harry Hartz third.

Murphy came up from the ranks to the top of the racing ladder in nine years. As far back as 1915 his career goes. In that year he broke in as a mechanic for "Wild Bill" Weightman, the wealthy Philadelphian who then backed Eddie Rickenbacker on the racing circuit. Infatuated with racing, Weightman himself drove in the Vanderbilt cup race at the Panama-Pacific Exposition and in this race the future champion, Murphy, was the man in the other seat. And he proved to be a good one.

First Chance in 1919

Fred Duesenberg took a liking to the boy and took him on as a mechanic, but it was not until 1919 that he got his big chance. That came during the Duesenberg attack on world's records at Sheepshead Bay in 1919 when at the last minute it was discovered that Eddie O'Donnell's arm, injured in a race, would not permit him to drive. Murphy took the wheel of the little 183-in. Duesenberg and established world's records in that class for all distances from one to 300 miles.

Following this with a win in his first big race at Uniontown, Pa., that same year, Murphy was established. With several notable victories in 1920, including wins at Indianapolis and Elgin, it was but natural that when Albert Champion decided to send the Duesenberg team to France to represent America in the French Grand Prix Murphy should be nominated as one of the pilots. With Joe Boyer, killed at Altoona, Labor Day, as his teammate, Murphy crossed the Atlantic and won the Grand Prix, being the first American ever to win a European racing event.

Fresh from his foreign invasion, Murphy followed this by winning the Indianapolis race in 1922 and at the end of the year he had scored so well in all events that he easily won the title of champion, awarded under the points system by the American Automobile Association.

While not so sensational as in 1922, his work in 1923 was brilliant enough to make him second in the championship fight, and he was going so well this year that he would have won the title hands down had it not been for today's accident. He needed only a victory today to make him a certain winner. As it is, it is doubtful if any of the other pilots will outpoint him by the end of the season.

Race critics, looking back over the years, agree that no other American driver has won greater racing honors than the dead champion. In fact, they hold that he was the greatest driver of all time, a consistent performer always, a wonderful judge of pace and one who, up to today, had been singularly lucky in escaping injuries on the racing path.

Doble Charge Dismissed, New Complaint Returned

SAN FRANCISCO, Sept. 15.—Confronted with the necessity of summoning more than 10,000 witnesses who have purchased Doble Steam Motors Corp. stock, District Attorney Matthew Brady asked for dismissal of a charge of violating the corporate securities act against F. G. Cox and W. E. Barnard, fiscal agents of the company. Superior Judge Wooley granted the request. Messrs. Cox and Barnard were on trial, accused of selling more stock than that for which a permit was granted by the corporation commissioner, but the State was not allowed to introduce books to prove the case.

Simultaneously with the dismissal of the case against Messrs. Cox and Barnard, new indictments were returned against the same defendants, and in addition Abner Doble, W. A. Doble, Jr., and Harold Haven, officers of the corporation, on charges of conspiracy to violate the "blue sky" law through selling the company stock.

ACTIVITY IN TOLEDO PLANTS

TOLEDO, Sept. 15—Employment in Toledo automotive plants continues to show improvement with those working on short hours gradually increasing to full-time schedules.

Last week there was a net gain of 349 workers to a total of 16,087 in 51 plants. Of the total 9023 men in 15 plants are working an average of 39.4 hours a week, a decrease in men on short-time and an increase in hours for those working restricted schedules.

French Show Space Allotted Americans

Positions at Main Entrance of Grand Palais Drawn by Oakland and Olds

PARIS, Sept. 10 (*by mail*)—Oakland and Oldsmobile have drawn positions 1 and 2 respectively to left and right of the main entrance to the Grand Palais, in the French automobile show to be held here from Oct. 2 to 12.

Other American firms to exhibit are Studebaker, Marmon, Cadillac, Packard, Chevrolet, Buick, Dodge Brothers, Willys-Overland, Lincoln and Ford. Last year Ford was shut out of the salon for having exhibited at outlaw shows. It is claimed that he has paid the fine imposed by the Paris show management in order to secure a stand this year.

French exhibitors will dominate at the Paris salon. The leading Italian and Belgian makers will have stands, but England will be represented only by Rolls-Royce, Austin and Morris. The Rolls-Royce company has decided to take advantage of this exhibition to present its four-wheel brakes to the public. These are of the mechanical type, with a friction servo-mechanism, and will be applied to the big model only.

Following the passenger car show there will be a truck exhibition in the same hall from Oct. 22 to 31. It has been decided to include a wireless telegraphy section in this show. As the London show opens five days after the closing of the Paris salon, arrangements have been made for chassis to be withdrawn from the French exhibition on the morning of the last day in order to be sent by special train to Boulogne, where they will be put aboard a special steamer running direct to London. This arrangement will enable the new Continental models to be exhibited both in Paris and London.

Shipments to Argentina Require Bills of Lading

WASHINGTON, Sept. 15—Effective Oct. 10 all automotive equipment, parts, tires, etc., shipped into Argentina must be accompanied by bills of lading. Otherwise a fine of 2 per cent of the value of the goods will be imposed on each shipment where the bill of lading is not received on the same steamer with the shipment. Advices to this effect have been cabled the Bureau of Foreign and Domestic Commerce by Commercial Attache Edward F. Feely at Buenos Aires.

These restrictions were imposed some time ago by the Argentine customs officials, who subsequently notified the Department of Commerce that the effective date of the order had been postponed until Jan. 1, 1925. This, however, was an error, the Department has been advised, and the order goes into effect on Oct. 10.

FULL TEXT OF TAX REGULATIONS

(*Continued from page* 537)

have accrued under the law for failure to make proper return and payment of the tax when due. In this connection attention is also invited to the penalty imposed by Section 1017 (b) of the Revenue Act of 1924.

When sold separately a so-called tractor or "semitractor" which carries a part of the load is taxable as an automobile truck chassis or automobile wagon chassis, and a so-called trailer or "semitrailer" is taxable as a "part or accessory."

Motor-driven machines for pulling or drawing vehicles around factories and railway stations, small trucks for handling baggage and trucks at railway stations and for transporting materials, articles, or goods around, and adapted for restricted use in factory yards or elsewhere, as distinguished from use on highways and roads, are not subject to tax.

Sales of self-propelling motor-driven machines, such as concrete mixers, stone crushers, excavating shovels, ditch diggers, etc., and machines which perform a mechanical function as they move along highways and roads, such as road graders, road scrapers, street sweepers, road sprinklers, and oilers, are not taxable as sales of automobile trucks, but if truck chassis are used by the manufacturer in the construction thereof, the sales are taxable as sales of automobile truck chassis, the tax applying to that part of the charge properly ascribable as the price for which the chassis itself is sold (if such amount is in excess of $1,000). The tax applies whether or not the manufacturer of the chassis himself superimposes or mounts thereon the mechanical part of the machine which does the mixing, sprinkling, etc.

Motor-propelled wheel or rolling chairs, motor-driven machine-gun and artillery carriages of the tractor type, motor-driven railroad cars and vehicles designed and adapted solely for use on rails or tracks, and not capable of use on highways and roads, are not taxable.

Any tires, inner tubes, parts, or accessories for automobile truck and automobile wagon chassis and bodies, sold on or in connection therewith or with the sale thereof are taxable at 3 per cent as part of the selling price of the complete article.

OTHER AUTOMOBILE CHASSIS AND BODIES AND MOTOR CYCLES

(2) Other automobile chassis and bodies and motorcycles (including tires, inner tubes, parts, and accessories therefor sold on or in connection therewith or with the sale thereof), except tractors, 5 per centum. A sale or lease of an automobile shall, for the purpose of this subdivision, be considered to be a sale of the chassis and of the body;

ART. 13. **Other automobile chassis and bodies, and motorcycles.**—The tax is 5 per cent of the price for which such articles are sold by the manufacturer. It applies to automobile chassis and bodies primarily designed for use in the construction of automobiles for carrying persons, although property may incidentally be transported at the same time. The sale of an automobile shall be treated, for the purpose of computing the tax, as the sale of a chassis and a body.

The tax of 5 per cent also applies to all motorcycles sold separately, and to motorcycles sold with side cars attached.

A chassis designed for use in the construction of a passenger car is an "other automobile chassis," taxable at the rate of 5 per cent, when sold by the manufacturer thereof, in every case.

Automobiles that are designed and primarily adapted for the transportation of persons, as distinguished from property, are "other automobiles." For example, ordinary passenger or pleasure cars, taxicabs, automobile buses, sight-seeing cars, hotel buses, omnibuses, police patrols, ambulances, cars used by fire department chiefs and marshals, mourners' coaches with accommodations for persons, other than the seat occupied in whole or in part by the driver, etc., are classified as "other automobiles," and the chassis and bodies of such vehicles are taxable at 5 per cent.

In case the purchaser of a tax-paid chassis produces an automobile, by the addition of a body manufactured by him, and sells the completed automobile, the tax must be paid by him on his selling price of the body, and unless the selling price of the body is accurately determined, and recorded and billed separately, he will be required to pay tax on the full selling price of both chassis and body, but will be permitted to take credit for the tax previously paid by the manufacturer from whom he purchased the chassis, as provided in Article 6. The same rule applies where the manufacturer of an "other automobile chassis" completes a car for sale by the use of a tax-paid body.

Considered Body Maker

Where a manufacturer of "other automobiles" produces a car by installing on a chassis manufactured by him a tax-paid body purchased from another manufacturer, and, in connection with such production, adds to the body, trimmings, finishings, etc., such additions, trimmings, etc., shall be considered further manufacture of the body, and he will be required to pay tax on the selling price of the finished body, but may take credit for the tax reimbursed to the manufacturer of the body, as outlined in Article 6.

Tires, inner tubes, parts and accessories for other automobile chassis and bodies, and for motorcycles, sold on or in connection therewith, or with the sale thereof, are taxable at 5 per cent.

ART. 14. **Combinations of chassis and bodies taxable at different rates.** — If the manufacturer of a taxable commercial body installs the same on an "other automobile chassis" manufactured by him, he must record and bill the sale of the body and chassis separately, and pay tax on the selling prices thereof at 3 per cent and 5 per cent respectively. In case a passenger body is installed by the manufacturer thereof on a taxable automobile truck chassis or automobile wagon chassis manufactured by him, the transaction must be handled in a similar manner, and the tax paid on the body and chassis at the rate of 5 per cent and 3 per cent respectively. The respective selling prices of the body and chassis must include all instruments, parts, and accessories made a part thereof, or attached to, or sold in connection therewith. Where doubt exists as to whether a part or accessory should be classified as belonging to the sale of the body or of the chassis, the fact of customary sale of such part or accessory with either body or chassis, when sold separately, will determine.

When a chassis is of such construction that it would ordinarily be used in the production of an automobile truck or automobile wagon, if it is fitted by the manufacturer thereof with a body designed for the carriage of persons, the sale of such vehicle by the manufacturer will be taxable at the respective rates imposed by subdivision (1) on the sale of an automobile truck chassis or automobile wagon chassis (if sold for a price in excess of $1,000), and subdivision (2) on the sale of an "other automobile body."

If a manufacturer of "other automobile chassis" mounts on such a chassis manufactured by him a nontaxable commercial body, he must record and bill the respective selling prices of the chassis and body separately and pay a tax of 5 per cent upon the price properly ascribable to the chassis. Similarly, if a manufacturer of nontaxable automobile truck chassis or automobile wagon chassis mounts on such a nontaxable chassis manufactured by him a passenger body manufactured by him, he must record and bill the transaction in such manner as to properly reflect the selling price of the body and compute and pay tax thereon.

TIRES, INNER TUBES, PARTS OR ACCESSORIES

(3) Tires, inner tubes, parts, or accessories for any of the articles enumerated in subdivision (1) or (2), sold to any person other than a manufacturer or producer of any of the articles enumerated in subdivision (1) or (2), 2½ per centum. This subdivision shall not apply to chassis or bodies for automobile trucks, automobile wagons, or other automobiles;

ART. 15. **Tires, inner tubes, parts and accessories sold to manufacturers.**—The tax of 2½ per cent applies to all tires, inner tubes, parts, or accessories sold separately by the manufacturer thereof, unless the sale is made to a manufacturer who furnishes a certificate in the form provided in this article for the exemption of such sale. The above applies regardless of the fact that tires, inner tubes, parts, or accessories may be sold for use on chassis selling for $1,000 or less or bodies selling for $200 or less.

The words "tires, inner tubes, parts, or accessories" shall be understood to embrace only such tires, inner tubes, parts, or accessories as have reached such a stage of manufacture that they constitute articles commonly or commercially known as "tires, inner tubes, parts, or accessories," and shall not be understood to embrace raw materials used in the manufacture of such articles.

Unvulcanized sheet rubber, liquid rubber vulcanizing cement, and friction fabrics are considered raw materials, and are exempt from tax.

Any article which has reached a state of manufacture wherein it is in itself a component part or accessory, and is of such a nature that it may be used or attached by an ordinary repair man or individual user as distinguished from a manufacturer or producer, is subject to tax as a "part or accessory."

Subdivision (3) exempts from tax sales of tires, inner tubes, parts, or accessories (except chassis or bodies), to a manufacturer or producer of automobile truck, automobile wagon, or other automobile chassis, or bodies, or to a manufacturer of motorcycle, tires, inner tubes, parts, or accessories.

In order to come within the exemption of the statute, the sale must be made by

COVERING AUTOMOTIVE INDUSTRY

a manufacturer, and such manufacturer must, at the time the goods are shipped or sold (whichever is prior), have in his possession an order or contract of sale, with certificate of the purchaser printed thereon, or in writing, permanently attached thereto, to the effect that the purchaser is a manufacturer of chassis or bodies for automobile trucks, automobile wagons, or other automobiles, or a manufacturer of motorcycles, tires, inner tubes, parts, or accessories; that he is purchasing the articles in question as such manufacturer, for use in his manufacturing operations, or for resale in some form or manner, or for free replacement under contract or guaranty; and that he will account to the internal revenue collector and pay tax on the sale of such articles, unless such sales by him are made to another manufacturer of chassis or bodies for automobile trucks, automobile wagons, or other automobiles, or a manufacturer of motorcycles, tires, inner tubes, parts, or accessories, for use in his manufacturing operations, or for resale by him in some form or manner or for free replacement, in which case he will require the same form of certificate from such manufacturer; that when such tires, inner tubes, parts, or accessories are sold other than on or in connection with the sale of new automobile truck, automobile wagon, or other automobile chassis or bodies, or motorcycles, on which tax is paid by him, he will pay the tax on such sale (unless exempted in accordance with the regulations); that when such articles are sold on or in connection with the sale of such new taxable articles, he will pay the tax on the full selling price of such articles.

Must Pay Tax on Sales

Manufacturers furnishing such certificates will be deemed manufacturers within the meaning of the law, and required to make monthly returns. They must pay tax on their sales of all taxable articles either manufactured by them or purchased under such certificate, unless their sales are exempted in parts or accessories purchased hereunder are accordance with the regulations.

Jobbers or dealers, who are not manufacturers, and users who are not manufacturing for resale, are not entitled to purchase tax free under certificate.

Following is a form of the certificate or statement which will be accepted and in substance must be strictly adhered to:

FORM OF CERTIFICATE

The undersigned hereby certifies that he is a manufacturer or producer of one or more articles enumerated in subdivision (1) or (2) of Section 600 of the Revenue Act of 1924, and that the tires, inner tubes, parts or accessories purchased hereunder are purchased by him as a manufacturer or producer, for use in his manufacturing operations, or for resale in some form or manner, or for free replacement under contract or guaranty, and agrees if any of the tires, inner tubes, parts, or accessories are sold by him exempt from tax to another manufacturer or producer of articles enumerated in these subdivisions, for like purposes, he will require a similar certificate from such manufacturer or producer. The undersigned further agrees that in respect to all tires, inner tubes, parts, or accessories sold by him, unless such sale is made under certificate to such a manufacturer or producer, he will pay the tax on such sale direct to the internal revenue collector, including it in his tax return covering the month in which such sale is made; said tax to be paid on the basis of the taxpayer's selling price of such articles when sold other than on or in connection with the sale of new automobile chassis or bodies, or motorcycles, tires, inner tubes, parts, or accessories, and on the selling price of such vehicles or articles when the same includes such articles.

If it is impracticable to furnish a certificate for each order, a certificate covering all orders between given dates (such period not to exceed a month) will be accepted. If in any case such an order and certificate cannot be produced on demand of any authorized agent of the department, the tax in respect to the sale will be considered in default. (See Article 26.)

Where the form of certificate outlined in this article is used it must be in the exact form specified, except that when such form is used to cover orders for a period of one month the language may be altered to indicate that fact.

It should be noted that chassis and bodies for automobile trucks, automobile wagons, and other automobiles, may not be sold tax free under certificate, even though sold to a manufacturer of articles enumerated in subdivision (1) or (2); and that "other automobile chassis" are not exempt from tax when sold by the manufacturer, even though sold for $1,000 or less, and as a part of, or for use in the construction of, an automobile truck or automobile wagon.

ART. 16. **Parts or accessories—Definition of parts.**—A "part" for an automobile truck, automobile wagon, or other automobile chassis or body, or motorcycle, is any article designed or manufactured for the special purpose of being used as, or to improve, repair, or replace, a component part of any such vehicle, or article, and which by reason of some peculiar characteristic is not such a commercial commodity as would ordinarily be sold for general use, or which is primarily adapted only for use as a component part of such vehicle or article.

Definition of accessories.—An "accessory" for an automobile truck, automobile wagon, or other automobile chassis or body, or motorcycle, is any article designed to be attached to or used in connection with such vehicle or article to add to its utility or ornamentation, or any article which is primarily adapted for use in connection with such vehicle or article whether or not essential to its operation or use.

As the rate of taxation is the same on both parts and accessories, it is not necessary to differentiate with respect to certain articles that may be classed as either one or the other.

The following may be mentioned as examples of "parts or accessories": Automobile tops, back and side curtains, wheels, engines, springs, axles, axle shafts, radiators, horns, speedometers, self-starters, spot lights, shock absorbers, bumpers, tire pumps, pressure gages, jacks, etc. When sold separately a side car is taxable as a "part."

Articles which have a general commercial use and which are not especially designed or peculiarly adapted for use in connection with automobile truck, automobile wagon, or other automobile chassis or bodies, or motorcycles, are not subject to tax as "parts or accessories." Thus a wrench or other tool of a kind ordinarily sold in hardware stores for general purposes is not subject to tax when sold separately; but if incorporated in an automobile tool kit, designed, intended, advertised, or held out for use on an automobile, as distinguished from garage or shop equipment, is taxable as a part of the assembled kit. A wrench or other tool of special design or construction, primarily adaptable for use in connection with automobiles, and which is intended to be carried in the car, is taxable.

Mere stock or commercial commodities such as bolts, nuts, washers, screws, etc., though used as components for taxable articles, are not "parts" within the meaning of subdivision (3) when sold separately. Articles, however, which ordinarily would be classed as commercial commodities become parts when, because of their design or construction, they are primarily adapted for use as component parts of such vehicles.

Component parts of articles taxable under the definition of "parts" are taxable when sold separately, if they have reached such a stage of manufacture that they are primarily adapted for use as component parts. Blow-out shoes are subject to tax as "parts," regardless of the fact that they may be made from old casings.

May Buy Tax Exempt

A manufacturer who purchases from the manufacturer thereof, tires, inner tubes, parts, or accessories for use in further manufacturing or producing an automobile truck, automobile wagon, or other automobile chassis or body, or a motorcycle, or a part of accessory for any of these articles, may purchase them tax exempt by furnishing the certificate provided for in Article 15.

In all cases where a subsequent manufacturer does not furnish the certificate provided for in Article 15, and the original manufacturer pays the tax on tires, inner tubes, parts, or accessories, if the subsequent manufacturer uses such tax-paid articles in the manufacture and sale of an article taxable under subdivision (1) or (2) of Section 600, he may take credit for such tax paid by the original manufacturer, as provided in Article 6.

Parts used by the manufacturer thereof for repair or rebuilding purposes are subject to taxation upon the amount charged for the entire job, unless the amount charged for the parts so used is billed separately, in which case the tax will attach to the sale price of the parts only.

Rebuilders of Tops and Bodies

A person, partnership, or corporation engaged in the business of building over automobile tops or bodies for installation on new or old cars, even though all such tops or bodies are manufactured as needed for an immediate job, is held to be a manufacturer of "parts" and liable to tax as such.

Robes, goggles, and lunch kits are not subject to tax. Asbestos brake-band linings, generator tubing, and radiator hose are not subject to tax unless sold in prepared sizes, lengths, shapes, or with such fittings as make them adapted for use only on or in connection with automobiles.

Parts or accessories for automobile trucks, automobile wagons, other automobiles, or motorcycles, primarily adapted for use on or in connection therewith are taxable when sold by the manufacturer thereof regardless of the purpose for which used.

Employment Spotty in Output Centers

Surplus of Labor Reported Generally—Akron Using Maximum Number of Men

WASHINGTON, Sept. 17—General report that automobile factories are increasing their operations and that employment in the industry is improving is contained in the September issue of the Industrial Employment Information Bulletin of the Employment Service of the Department of Labor. It is made plain, however, that there are still numerous instances in which automobile plants are working on part time and surpluses of employment exist.

Almost without exception the reports on rubber tire plants show maximum employment with overtime the order of business.

Following are some of the more important bulletins:

Detroit: At Highland Park two large motor companies are working only part time, affecting 60,000 workers.

Plant in Flint Closed

Flint: A surplus of labor exists, principally of automobile workers. One automobile plant has closed down completely, affecting about 200 men and three other large automobile factories are operating only part time, affecting 9500 men.

Indianapolis: Some idle labor exists, particularly in the automobile line.

Anderson, Ind.: A surplus of labor exists in the automobile industry. A large motor company has located a branch factory here that will require considerable labor when operations are started.

Kokomo, Ind.: A local rubber plant is operating overtime, while an automobile plant has closed down, affecting a small number of workers.

Muncie, Ind.: There is a surplus of labor, particularly automobile workers.

Racine, Wis.: The rubber-tire companies are working overtime, one plant running three shifts.

Cincinnati: After about two months of idleness one automobile manufacturing company here has resumed operations at 50 per cent capacity production.

Toledo: Nearly all plants are running in this city, with the surplus labor most apparent in the automobile accessories industry.

Akron: All the large rubber factories have increased production and are now operating at about 84 per cent capacity.

Stocks Cut in July

WASHINGTON, Sept. 16—Sharp curtailment in factory output and shipments of automobiles during the second quarter of the year was evidently effective in reducing dealers' inventories, for in July both output and shipments increased, which is contrary to the seasonal trend noted in previous years.

This observation is made in the September Federal Reserve Bulletin of the Federal Reserve Board in which a comprehensive survey is given of the automotive industry.

"Both shipments and production, however," the bulletin continues, "were smaller than in July of last year. Many producers placed their new models on the market in July, and sales of these models were partially responsible for better business during recent weeks. The new models were in several cases offered at prices higher than those of previous models. Such increases, however, have not been general and, in fact, have usually been only on particular models."

Continuing, the bulletin says:

According to statistics collected by the Federal Reserve Bank of Chicago from certain middle western dealers and according to figures reported by the General Motors Corp., retail distribution of automobiles during July continued the decline noted in previous months and was likewise much less than at the same time last year.

Dealers' inventories of both new and old cars were reduced substantially during July, but as compared with July 31, 1923, they were still considerably larger. The General Motors Corp. figures show that retail sales to consumers declined during July while manufacturers' deliveries to dealers increased; the latter, however, were less than the former for both July and for the first seven months of the year, indicating a reduction in dealers' stocks.

Definite improvement has been noted in the tire industry in recent weeks. During July shipments of pneumatic tires increased over 25 per cent above June and shipments of inner tubes were more than 35 per cent higher. In both cases previous records were exceeded. Production of inner tubes showed a small increase in July but reports for August indicate that factories have begun to increase operations.

New workers are being employed in large numbers and output has risen well above that of June and July. Crude-rubber prices advanced steadily until early in August, but in the second week of that month the New York quotation on latex crepe fell from 28.3 cents a pound, the highest since last December, to 25.8 cents. It recovered the following week to 28 cents.

Ford Dealers Send Wires for Increased Shipments

DETROIT, Sept. 15.—The Ford Motor Co. reports business conditions of the country as showing a decided improvement, this being reflected by August sales reports. In the last 10 days of the month sales exceeded the preceding days by more than 900 cars a day.

As a result of this increased business the company has been receiving requests for additional cars from almost all sections of the country, it reports. Receipt of wires for increased shipments establishes the practical clearings away of dealer stocks. The company has been operating at reduced pace for several months to permit of clearing up of both new and used cars, and now that dealers are wiring for shipments the indications are that the market is ready for cars in large numbers.

FINANCIAL NOTES

Borg & Beck has declared its regular quarterly dividend of 50 cents, payable Oct. 1 to stock of record Sept. 20.

McCord Radiator & Manufacturing Co. has declared its regular quarterly dividend of 75 cents on Class A stock, payable Oct. 1 to stock of record Sept. 20.

Spicer Manufacturing Co. has declared its regular quarterly dividend of 2 per cent on the preferred stock, payable Oct. 1 to holders of record Sept. 20.

Overman Cushion Tire Co. has declared the regular quarterly dividend of 1½ per cent on the common and preferred, payable Oct. 20 to holders of record Sept. 30.

Jordan Motor Car Co. has declared its regular quarterly dividend of 75 cents a share on common and 1¾ per cent on preferred, both payable Sept. 30 to stock of record Sept. 15.

Edmunds & Jones Corp. has declared an extra dividend of 50 cents a share on the common, in addition to the regular quarterly dividend of 50 cents a share, both dividends being payable Oct. 1 to stock of record Sept. 20.

India Tire & Rubber Co. has declared an extra dividend of 75 cents a share on the common stock, payable Oct. 1. This is additional to the regular dividend of $1 a share, payable on the same date, and the regular quarterly dividend on the preferred stock. The company at the end of the previous quarter paid a similar extra dividend.

Federal Bureau Reports Its Safety Principles

WASHINGTON, Sept. 17—Believing that consideration of highway safety is of the greatest importance in view of the great increase in highway traffic and highway accidents, the Bureau of Public Roads of the Agriculture Department has completed a study of existing conditions. The conclusions have led to the following statement of basic principles:

1. The development of safe roads by elimination of all known dangers in so far as such elimination is possible within physical and economic limitations.
2. Warning of uneliminated dangers by means of easily recognized signs and other devices of standardized form, uniformly placed with respect to the danger.
3. The development of safe vehicles by perfection of running parts and adoption of safety devices.
4. Diligence and care in the licensing of drivers of motor vehicles to eliminate the incompetent, careless and irresponsible driver.
5. The development of simple, uniform and effectual traffic regulations and the education of the whole public to a complete acquaintance with them.
6. The rigid enforcement of traffic regulations.

BLUE LAW VIOLATION CHARGED

JEFFERSON, WIS., Sept. 15.—Robert W. Lyons, one of the promoters of the Jefferson Rubber Co. and its president during its rather brief existence, is under arrest, awaiting a preliminary hearing on charges of violating the Wisconsin "Blue Sky" law.

British Developing Trade in Colonies

More Anxious to Get Overseas Business Since Removal of McKenna Duties

JOHANNESBURG, SOUTH AFRICA, Aug. 18 (*by mail*)—British manufacturers since the repeal of the McKenna duties seem all the more anxious to develop colonial trade. Representatives here are all out to place their firm's products on the market and in their efforts are suggesting several alterations in design in order to bring the British cars in line with the American—which are better suited for local conditions. Most of the low priced British cars are of very small horse power, but power is wanted here, and the average motorist has become educated up to it.

Morris Truck Due

A new British 1-ton truck, the Morris, is on its way to the agents in South Africa, and its arrival is awaited with some interest. The vehicle, it is said, will be suitable for light bus work, as it is quite a speed proposition. In the bus field, fast vehicles are demanded, and 99 per cent of those in use have American chassis.

Balloon tires are gaining favor in South Africa rapidly and it is thought that within the next 12 months balloons will almost entirely supersede the present high-pressure tires.

The first balloon tires in interchangeable sizes to come to South Africa were brought out by Michelin, and Goodyear followed right after. At present Goodyear and Michelin seem to have the bulk of the business, but it is understood that Goodrich and United States will get going almost immediately.

Motorists here are always ready to try something new, and if it is good they take it up readily. The slightly higher cost of balloons has not been a deterrent factor as regards sales. In Rhodesia, especially, balloons have caught on, and there are several instances of dealers not having enough stocks to meet the demand.

Uusual Decline Felt

About this time of the year—which is winter here—there is generally a seasonal slump in the sale of cars. The country is right in the thick of it now, but the falling off is not any worse than usual, and most dealers seem satisfied with the situation.

It is thought that a good wool season is to be expected, and the farmers in the southern part of the Union seem fairly optimistic. Up in the north, however, the locusts have done untold damage. It it difficult to recall a time when the locust invasion has been so severe.

Great interest is being taken locally in record runs put up by steam wagons recently. A Super Sentinel 7-ton (6 English tons) truck traveled from Durban to Johannesburg in the remarkably good time of 31 hours over a period of two and a half days. The last day's journey was from Volksrust to Johannesburg, a distance of 152 miles, and this was covered at an average speed of 19 m.p.h.

The total distance from Durban to Johannesburg by road is approximately 400 miles, and the best portions are only really equal to fairly good dirt tracks in America. The worst stretches are not worthy of the name of road at all. The average phaeton time for the Durban-Johannesburg journey is about 20 hours, so it will be seen that the steam wagon put up a remarkable performance.

It carried three and a half tons, and used only about two tons of coal. This is a coal country, and for heavy transport work the steam vehicle is looked upon with great favor. There are, of course, a good number of big motor trucks in use, but the new type steam wagons are winning out. The Super Sentinel can travel at 30 m.p.h. with a big load.

An interesting feature of the industry throughout the country is the gradual passing of the petrol trade from the garages to the petrol filling station. These filling stations were started only a few years ago, and are now to be seen in all the big towns. Johannesburg, in particular, has its full complement of filling stations, and they are all over in the city and suburbs.

Some of them are quite pretentious and compare favorably with those in American cities. Others simply comprise a pump on the footwalk near a little shop. Motorists are getting educated up to the habit of purchasing their gas at these stations and paying cash for it. This is a very good thing, for one of the difficulties in business in South Africa is the long credit demanded—and obtained.

INDUSTRIAL NOTES

White Motor Co. has broken ground in Louisville, Ky., for a new assembly plant. Thirty-five men will be employed at the plant when it starts operating as a branch for the southern district. The building will be of steel and brick construction, 105 x 150 feet and one story in height.

Smith & Neil Co. of Jacksonville, Fla., manufacturer of automobile bodies, has completed a 7000 ft. addition to its plant, giving a total manufacturing space of 25,000 sq. ft.

W. H. Thomas Manufacturing Co., Spencer, Iowa, making the Bull Dog foot accelerator for Fords, has again increased its plant capacity.

1922 CANADIAN TIRE OUTPUT

AKRON, Sept. 17—Canadian automobile tire factories during 1922, which is the latest year for which official government figures are available here, produced a total of 1,482,796 tires, valued at $19,519,208, as compared with 857,000 tires, valued at approximately $15,000,000, in the previous year.

METAL MARKETS

A birdseye view of the steel industry shows normal activity almost restored following the recent slump, but one encounters quite a few individual salesmanagers who continue to complain of subnormal buying. This merely goes to show that distribution of orders is uneven, and that some mills are more favored in this respect than others. Virtually all the buying of automotive steels is for immediate or nearby shipment. Contracts without accompanying specifications have gone out of fashion.

There appears to be a differential of approximately $2 per ton between the Pittsburgh and Chicago steel bar markets, but greater steadiness is in evidence at both points, and some mills are asking 2.15c., Pittsburgh, as against the general quotation of 2.10c. Sheet demand and prices are well maintained. Blue annealed sheets now command 2.70c., Pittsburgh, as the inside price. The undertone of the market for full-finished sheets is strong.

Incidentally it may be mentioned that much of the recent sheet buying by freight car builders was for the construction of automobile cars. Constant buying of automotive alloy steels is noted. Prices rule steady. Quantities involved are not extraordinarily heavy, but the alloy steel makers are enjoying a very fair amount of business at full prices. Advances in ferroalloys have been general of late. Semi-finished descriptions of steel show much disparity in prices, but the market for sheet bars has steadied as the result of the better feeling in the sheet market. Non-integrated rollers seem to be fairly well covered for the present. All in all, the steel market seems to be headed for a period of improved demand, with prices very likely firm, but not higher. Producers are primarily interested in enlarging their operating schedules, and, unless the demand from any quarter should suddenly develop unexpectedly heavy expansion, would hardly care to jeopardize the present flow of orders by premature advances.

Pig Iron.—While extremely quiet and uninteresting, the market for foundry and malleable irons shows more firmness. Automotive melters are buying carloads in a routine way.

Aluminum.—The market appears to be stiffening. Importers state that they have booked good-sized orders for last quarter shipment, and, if the automotive demand in the next month quickens, there is a likelihood of the market developing a rising tendency. The European producers are reported to have held a meeting in Switzerland recently. German production, according to latest advices from that country, is undergoing considerable expansion. During the French occupation the Erft works were virtually idle. They are now producing at the rate of 700 tons a month, and expected to turn out 1000 tons a month, the plant's full capacity, in the near future. The Inn Works, when completed, will produce also 1000 tons a month.

Copper.—Producers' refusal to make public production returns, while adversely commented upon by many consumers, has no influence on the domestic situation, being principally a weapon aimed at London speculators. The market seesaws fractionally from day to day, but it seems hard work to push it to 14c. Automotive buying of copper and brass products is on the uptrend.

Lead.—Storage battery makers are buying in fair tonnages.

Calendar

SHOWS

Oct. 21-27—Transportation Show, Motor Truck Industries, Inc., American Exposition Palace, Chicago.

Nov. 9-15—New York, Annual Automobile Salon, Commodore Hotel.

Nov. 10-15—Chicago, Annual Show and Convention of the Automotive Equipment Association, Coliseum.

Jan. 2-10—New York, National Automobile Show, under the auspices of the National Automobile Chamber of Commerce, Bronx Armory. Open to the public except on Jan. 2 and 3 which are trade days.

Jan. 23-31—Chicago, National Automobile Show, under the auspices of the National Automobile Chamber of Commerce, Coliseum and First Regiment Armory. Open to the public except on Jan. 23 and 24 which are trade days.

Jan. 25-31—Chicago, Annual Automobile Salon.

FOREIGN SHOWS

Sept. 21-28—Prague, Czecho-Slovakia, Prague Autumn Fair.

Oct. 2-5—Dantzig, Second International Dantzig Fair, automobiles and allied equipment.

Oct. 2-12—Paris, passenger cars, motor cycles, bicycles and accessories, Grand Palais.

Oct. 17-25—London, Annual Passenger Car Show, Olympia.

Oct. 22-31—Paris, motor trucks, stationary engines, garage tools and machine tools, Grand Palais.

Nov. 9-19—Buenos Aires, Annual Automobile Show, Pabellon de las Rosas, under the auspices of the Automovil Club Argentino.

Dec. 1-13—Montevideo, Uruguay—Second Annual Motor Show, under the auspices of the Centro Automovilista del Uruguay, held in buildings of the Asociacion Rural del Uruguay.

RACES

Oct. 2-4—Dayton, Ohio, Fifth Airplane Race for the Pulitzer Trophy.

Oct. 4—Fresno.

Oct. 19—Kansas City.

Nov. 24—Los Angeles.

CONVENTIONS

Sept. 26-27—Niagara Falls, Hotel Clifton, National Battery Manufacturers Association.

Sept. 22-26—Boston, Sixth Convention and International Steel Exposition of the American Society for Steel Treating.

Oct. 15-17—Cleveland, Fall Convention of the Motor and Accessory Manufacturers Association.

Oct. 16-18—Briarcliff Manor, N. Y., Semi-Annual Meeting of the American Gear Manufacturers Association, Briarcliff Lodge.

Jan. 5—New York, Convention under the auspices of the National Automobile Dealers Association, Hotel Commodore.

Jan. 26-29—Chicago, Eighth Annual Convention of the National Automobile Dealers Association, Hotel LaSalle.

S. A. E. MEETINGS

Sept. 24—New England Section, Abrasives and Their Use.

Sept. 26—Washington Section, Cosmos Club, The Chemical Control of Gaseous Detonation, Thomas Midgley, Jr.

Oct. 2—Aeronautical Meeting at Dayton at the time of the Pulitzer Races.

Oct. 22-24—S. A. E. Production Meeting, Detroit.

Nov. 18-19—Joint Service Meeting of the S. A. E. with the N. A. C. C. Cleveland.

Jan. 20-23—S. A. E. Annual Meeting, Detroit.

62.1 M.P.H. Averaged in French Road Test

PARIS, Sept. 10 (*by mail*)—An average speed of 62.1 m.p.h. was maintained by a 122 cu. in. touring equipped Chenard-Walcker, driven by Leonard, in the 325-mile handicap road race, held at Boulogne, for the Georges Boillot cup. The course, a triangular one measuring rather more than 23 miles round, was hilly and winding and the entire race was run through rain, mist and drizzle.

While there was no stipulation that stock cars should be used, full touring equipment was required and passengers or equivalent ballast had to be carried. The winning Chenard-Walcker weighed 2195 lb. with tanks empty and without passengers. Two-seater bodies being allowed up to 122-in. piston displacement, the Chenard-Walcker took advantage of this with a special type of body the full width of the chassis, enclosing the running boards and the rear wheels, and being roughly modeled on a deep-section airplane wing.

A special four-cylinder overhead valve and overhead camshaft engine with dry sump lubrication was used, and the car had front wheel and transmission brakes, but no brake drums on the rear wheels.

Chenard-Walcker Second

A second and similar Chenard-Walcker, driven by Senechal, finished second 1 min. 35 sec. behind the winner. A 122-in. Bugatti came third and two other Chenard-Walckers tied for fourth place. Matthys, on a 122-in. Bignan, fitted with a fabric leather sedan body, finished fifth after being held up a considerable time by plug trouble.

The Boillot cup race being open to all sizes of cars was run for the first time on a handicap basis, the scratch man being Coe on a 260-in. Vauxhall, who gave 1 hr. 22 min. to the smallest car, a 67-in. Aries, and gave 52 min. 26 sec. to the 122-in. cars.

Under the weather conditions prevailing this handicap gave the Vauxhall no chance of winning; indeed its actual lap times were never equal to those of the Chenard-Walckers. Leonard made the fastest lap at 68.5 m.p.h. Of the 27 starters only eight finished the race. Among the victims was Arthur Duray, whose 183-in. Aries broke down with less than a mile to go.

A 91 cu. in. stock Bugatti, driven by Marshall, won the Boulogne 186-mile light car race at an average of 54.46 m.p.h. In the 30½ cu. in. two-seater class a French-built Morgan, equipped with a water-cooled single-cylinder Blackburne engine, averaged 38.7 m.p.h.

In the short distance speed trials held at Boulogne fastest time was made by J. H. P. Thomas on a straight-eight Leyland, who averaged 127.57 m.p.h., standing start, for a run of 3 kilometers over a switchback road.

Moon Increases Schedule with Continental Motors

DETROIT, Sept. 15—The schedule of Moon Motor Car Co. with Continental Motors Corp. has been increased 25 per cent for 1925 over its requirements this year, according to a statement by Stewart McDonald, president of the Moon company.

Business indications are that the Moon volume will be fully that much in excess of the present year, he said. He declares that business in the last six months of this year should show an increase over the same period in 1923. The western and southern country is in good financial condition, he said, better than for several years. Dealers have no surplus stocks, and orders and inquiries from all parts of the country are encouraging.

Citroen Will Launch Line Across Sahara

PARIS, Sept. 10 (*by mail*)—A regular passenger-carrying and mail automobile service from the Algerian coast to Timbuctoo, across the full length of the Sahara desert, will be inaugurated next month by the Citroen Automobile Co.

Automobile services already exist in Algeria, but until a few months ago no automobile had ever gone further south than Colomb Bechar, in southern Algeria, and on the boarders of Morocco. Recent experience in the Sahara has decided André Citroen that the time is now ripe for running a regular passenger service from the coast to Timbuctoo and the Niger valley.

Special Citroen-Kegresse creeper track automobiles are now being built in Paris, drivers, mechanicians, wireless operators and other specialists are being trained, hotels are being erected at the various oases on the line of travel, and by October it is expected that a through automobile service from the Mediterranean to the Niger will be in operation.

Types to Be Used

It is intended to use wheel-type automobiles from the coast to Colomb-Bechar, and from this point to Timbuctoo, a distance of about 1200 miles, Citroen creeper track machines will be employed. On a commercial basis the journey from Colomb-Bechar to Timbuctoo can be made in five days, but this time can be improved on if necessary.

In addition to the commercial advantages to be obtained by linking up the rich Niger valley with the Mediterranean coast, it is believed that this automobile service will attract large numbers of sightseers interested in getting a glimpse of African conditions.